Cat. No. V093-E1-01

# NS-Runtime Software

# USER'S MANUAL

OMRON

# Notice

OMRON products are manufactured for use according to proper procedures by a qualified operator and only for the purposes described in this manual.

The following conventions are used to indicate and classify precautions in this manual. Always heed the information provided with them. Failure to heed precautions can result in injury to people or damage to property.

**⚠ DANGER** Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury. Additionally, there may be severe property damage.

**⚠ WARNING** Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury. Additionally, there may be severe property damage.

**⚠ Caution** Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury, or property damage.

## OMRON Product References

All OMRON products are capitalized in this manual. The word "Unit" is also capitalized when it refers to an OMRON product, regardless of whether or not it appears in the proper name of the product.

The abbreviation "Ch," which appears in some displays and on some OMRON products, often means "word" and is abbreviated "Wd" in documentation in this sense.

The abbreviation "PLC" means Programmable Controller.

The abbreviation "host" means a controller, such as an IBM PC/AT or compatible computer, that controls a PT (Programmable Terminal).

## Visual Aids

The following headings appear in the left column of the manual to help you locate different types of information.

**Note** Indicates information of particular interest for efficient and convenient operation of the product.

***Reference*** Indicates supplementary information on related topics that may be of interest to the user.

**1, 2, 3...** 1. Indicates lists of one sort or another, such as procedures, checklists, etc.

# Contents

# About this Manual

This manual provides important information on using the NS-Runtime Software. Please read and be sure you understand this manual before attempting to use the NS-Runtime Software, and keep this manual in a safe place where it is accessible for future reference.

**Section 1 Overview**

This section provides an overview of the NS-Runtime including the functions, features, connection types and communication methods.
A comparison between NS-Runtime and the NS Series is also described.

**Section 2 Setting up, Starting up and Exiting the NS-Runtime**

The NS-Runtime is application software that runs on Microsoft Windows XP.
This section describes how to install the NS-Runtime on Windows XP. It also describes methods of starting and exiting the NS-Runtime.

**Section 3 Creating Projects**

This section describes procedures for creating projects, system settings, communications settings and creating screens for the NS-Runtime.

**Section 4 NS-Runtime Functions**

This section describes the NS-Runtime functions.
It mainly describes functions that are added or changed from the NS Series and the CX-Designer, and does not describe functions equivalent to those of the NS Series and the CX-Designer.
For NS Series and CX-Designer functions that this manual does not describe, refer to each manual mentioned in 1-1 About This Manual.

**Section 5 NS-Runtime System Menu Operations**

This section describes the basic methods for operating the System Menu of the NS-Runtime and details on functions.

**Section 6 Transferring Project Data**

This section describes how to send created or modified screen data to the NS-Runtime environment including the NSA Series and to register them. It also describes how to read data registered in the NS-Runtime.

**Section 7 Troubleshooting**

This section describes the countermeasures for errors that may occur on the NS-Runtime.
This section explains errors specific to the NS-Runtime. For information on other errors, refer to 5 Troubleshooting and Maintenance in the NS Series Programming Manual.

| **⚠WARNING** | Failure to read and understand the information provided in this manual may result in personal injury or death, damage to the product, or product failure. Please read each section in its entirety and be sure you understand the information provided in the section and related sections before attempting any of the procedures or operations given. |
|---|---|

# Related Manuals

The following manuals are related to the NS-Runtime Software. (The boxes at the end of the catalog numbers indicate the revision code.)

**This manual**

NS-Runtime Software User's Manual ............................................V093-E1-□

Describes installing the NS-Runtime Software, basic operations, and the user interface. It also describes special features and application methods of the NS-Runtime Software.

CX-Designer User's Manual ......................................................V088-E1-□

Describes installing the CX-Designer, basic operations, and the user interface. It also describes special features and application methods of the CX-Designer.

CX-Designer Online Help

Online help can be used to display CX-Designer operating procedures, settings, and other information on-screen, including detailed setting methods for functional objects and graphics.

NS Series Programming Manual ................................................V073-E1-□

Describes the functions and application methods of NS-series PTs. It also provides troubleshooting methods for problems that might occur with the PT.

NS Series -V1/-V2 Setup Manual ..............................................V083-E1-□

Provides information on NS-series version 1 and version 2 PTs (i.e., the NS12-V1/V2, NS10-V1/V2, NS8-V1/V2, and NS5-V1/V2). It describes how to install and connect a PT, provides basic specifications, and provides other hardware information on the PTs.

NS Series Setup Manual ............................................................V072-E1-□

Provides information on NS-series PTs prior to version 1 (i.e., the NS12, NS10, and NS7).

CXONE-AL□□-E CX-One Setup Manual ....................................W463-E1-□

Provides an overview of and describes how to install the CX-One FA Integrated Tool Package.

CX-Designer Introduction Guide ..................................................V089-E1-□

This tutorial describes the procedures for creating and operating simple screens as an example for first users of NS-series PTs.

### Macro Reference (Installed from the CX-Designer’s CD-ROM)

The online help of the CX-Designer provides detailed information on the macro function of NS-series PTs. PDF data containing the same contents is installed on the hard disk when the CX-Designer is installed. Use either the online help or this PDF data as required.

### PLC Operation Manuals

Refer to the operation manuals for the CPU Unit, Special I/O Units, CPU Bus Units, Communications Units, and other PLC Units that you are using to obtain information on PLC operation and functions.

# Terminology

The following terminology is used in this manual.

| | |
|---|---|
| NS-Runtime | Indicates OMRON's NS-Runtime Software (NS-NSRCL□□). |
| NS-series PT | Indicates a Programmable Terminal in OMRON's NS Series of Programmable Terminals. |
| PLC | Indicates an OMRON Programmable Controller. |
| Host | Indicates the PLC, IBM PC/AT or compatible computer, or personal computer controlling an NS-series PT. |
| CX-One | Indicates OMRON's CX-One Integrated FA Tool Package (CXONE-AL□□C-E). This package contains the Support Software for most OMRON PLCs and Components. |
| CX-Designer | Indicates the OMRON CX-Designer (NS-CXDC1-V□). |

# Introduction

The NS-Runtime Software provides the same functionality as an NS-series Programmable Terminal to enable implementing FA onsite information displays and operations on Windows XP. To enable using the NS-Runtime Software correctly, be sure you have sufficient understanding of the CX-Designer and Programmable Terminal functions and characteristics. Refer to all related manuals when using the NS-Runtime Software.

## • Intended Audience

This manual is intended for the following personnel, who must also have knowledge of electrical systems (an electrical engineer or the equivalent).

- Personnel in charge of introducing FA systems into production facilities.
- Personnel in charge of designing FA systems.
- Personnel in charge of installing and connecting FA systems.
- Personnel in charge of managing FA systems and facilities.

## • Installation Environment

The NS-Runtime operates on an open platform, and usage conditions differ from those of NS-series PTs.

- Never use the NS-Runtime for an FA system that operates 24 hours a day.
- OMRON disclaims responsible for any problems caused by using the NS-Runtime with other software applications or any problems caused by the installation environment.
- It is the user's responsibility to isolate causes of any problems caused by other software applications or by the installation environment.

# Application Precautions

- For information on device connections and settings for a computer where the NS-Runtime is installed, also refer to NS-V1/V2 series Programmable Terminals Setup Manual V083-E1-□.
- Use this product under Windows general specifications.
- When unpacking the product, check the CD and the dongle carefully for any damages.
- Do not install unnecessary applications in a computer where the NS-Runtime is installed.
- Exit all applications that are not directly related to the NS-Runtime.
- Disable sharing hard disks, printers or other devices with other computers on any network.
- Some notebook computers set the RS-232C port to modem or infrared line by default. Change the settings according to the operating instructions for your computer so that the RS-232C port can be used as a normal serial port.
- Some notebook computers set the RS-232C port not to supply rated power to the port to save energy by default. There are Windows settings and also possibly settings for computer specific utilities or BIOS settings for power saving. Disable the settings according to the operating instructions for your computer to provide power to the port.
- The whole systems may stop depending on the way the NS-Runtime started/ended. Follow the procedure to start/end the NS-Runtime.
- Start actual system application only after sufficiently checking screen data, macros, and the operation of the program in the host.
- Include programming that regularly accesses the RUN signal and confirms that the NS-Runtime is operating normally.
- Confirm the safety of the system before pressing touch switches.
- Do not accidentally press touch switches when the backlight is not lit or when the display does not appear.
- Signals from the touch switches may not be input if the switches are pressed consecutively at high speed. Confirm each input before proceeding to the next one.
- Before initializing screen data, confirm that existing data is backed up at the CX-Designer.
- When changing the password with the system menu, do not reset or turn OFF the power supply until writing is finished (i.e., until the Write Button returns to its original condition). It may become impossible to manipulate screens if the password is not set correctly.
- Do not attempt to disassemble, repair, or modify the product in any way.
- Dispose of the product according to local ordinances as they apply.



# *Read and Understand this Manual*

Please read and understand this manual before using the product. Please consult your OMRON representative if you have any questions or comments.

1. WARRANTY
   1) The warranty period for the Software is one year from either the date of purchase or the date on which the Software is delivered to the specified location.
   2) If the User discovers defect of the Software (substantial non-conformity with the manual), and return it to OMRON within the above warranty period, OMRON will replace the Software without charge by offering media or download from OMRON's website. And if the User discovers defect of media which is attributable to OMRON and return it to OMRON within the above warranty period, OMRON will replace defective media without charge. If OMRON is unable to replace defective media or correct the Software, the liability of OMRON and the User's remedy shall be limited to the refund of the license fee paid to OMRON for the Software.

2. LIMITATION OF LIABILITY
   1) THE ABOVE WARANTTY SHALL CONSTITUTE THE USER'S SOLE AND EXCLUSIVE REMEDIES AGAINST OMRON AND THERE ARE NO OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO, WARRANTY OF MERCHANTABILITY OR FITNESS FOR PARTICULAR PURPOSE. IN NO EVENT, OMRON WILL BE LIABLE FOR ANY LOST PROFITS OR OTHER INDIRECT, INCIDENTAL, SPECIAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF USE OF THE SOFTWARE.
   2) OMRON SHALL HAVE NO LIABILITY FOR DEFECT OF THE SOFTWARE BASED ON MODIFICATION OR ALTERNATION TO THE SOFTWARE BY THE USER OR ANY THIRD PARTY.
   3) OMRON SHALL HAVE NO LIABILITY FOR SOFTWARE DEVELOPED BY THE USER OR ANY THIRD PARTY BASED ON THE SOFTWARE OR ANY CONSEQUENCE THEREOF.
   4) The USB dongle provided with the NS-Runtime uses the Advanced Encryption Standard (AES). As a result, domestic laws may define the USB dongle as a cryptogram decoder and may place restrictions on the import, export, use, and sale of the USB dongle. Before you import or export the USB dongle, or before you use or sell the USB dongle outside of the country of purchase, confirm if domestic laws stipulate any restrictions.

3. APPLICABLE CONDITIONS
   - USER SHALL NOT USE THE SOFTWARE FOR THE PURPOSE THAT IS NOT PROVIDED IN THE ATTACHED USER MANUAL.
   - The user must operate the product according to the general specifications.
   - Do not use the PT touch switch input functions for applications where danger to human life or serious property damage is possible, or for emergency switch applications.
   - Before using the product under the following conditions, make sure that the ratings and performance characteristics of the product are sufficient for the systems, machines and equipment, and be sure to provide them with a fail-safe circuit, and consult your OMRON representative.
     1) Using the product under conditions or environments, which are not described in the manual.
     2) Applying the product to nuclear control systems, railroad systems, aviation systems, vehicles, combustion systems, medical equipment, amusement machines, safety equipment, and other systems, machines and equipment.
     3) Using the product for any purposes that may have a serious influence on lives and property, and requires special safety considerations.
   - This manual provides information for connecting and setting up an NS-Runtime. Be sure to read this manual before attempting to use it and keep this manual close at hand for reference during installation and operation.

4. CHANGE IN SPECIFICATION
   The software specifications and accessories may be changed at any time based on improvements and other reasons.

5. EXTENT OF SERVICE
   The license fee of the Software does not include service costs, such as dispatching technical staff.

6. ERRORS AND OMISSIONS
   The information in this manual has been carefully checked and is believed to be accurate; however, no responsibility is assumed for clerical, typographical, or proofreading errors, or omissions.

# Section 1

# Overview

This section provides an overview of the NS-Runtime including the functions, features, connection types and communication methods.

A comparison between NS-Runtime and the NS Series is also described.

# 1-1 About this manual

This manual describes specifications and the system configuration of the NS-Runtime and screen creation methods using the CX-Designer.

This manual also explains added and modified functions from the existing NS Series and CX-Designer. However, functions equivalent to those of the NS Series and the CX-Designer are not explained in this manual.

For functions of the NS Series and the CX-Designer that are not described in this manual, please refer to documents including the documents listed in the table below.

| Document | Manual No. |
|---|---|
| NS Series Programming Manual | V073-E1-□ |
| Host Connection Manual (Host Link) | Provided with CX-Designer |
| Macro Reference | Provided with CX-Designer |
| CX-Designer Online Help | Provided with CX-Designer |

# 1-2 About NS-Runtime

The NS-Runtime is software that provides functions equivalent to the NS Series, enables to display information and perform operations for FA manufacturing sites and runs on Windows XP including the NSA Series.

## 1-2-1 NS-Runtime features

The following are the features of the NS-Runtime.

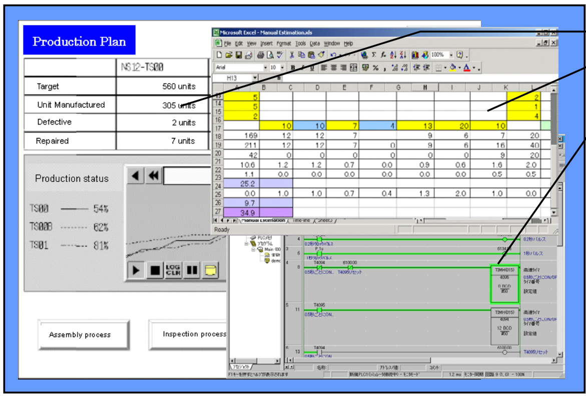
**Other applications can be used at the same time.**

The NS-Runtime is software that runs on Windows XP.

The NS-Runtime, therefore, can be used with other Omron software simultaneously.

Moreover, software such as commercially available form software and applications created by users and the NS-Runtime can be used at the same time.

Specified applications can also be started up from the NS-Runtime.

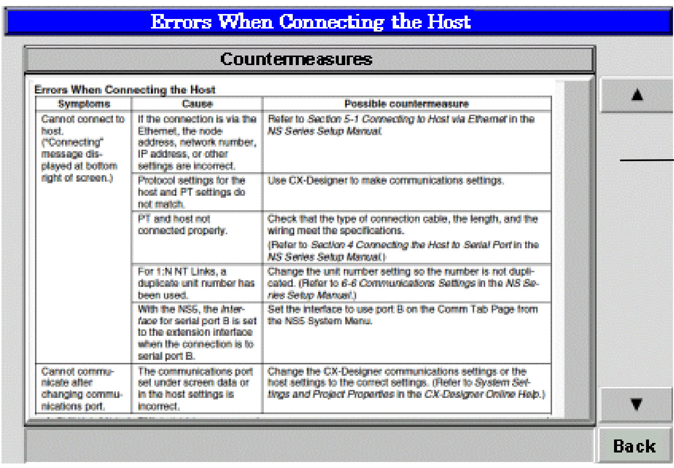



Other applications can be overlapped on the screen data, and they can be used at the same time.

**Specified document file can be displayed**

With the NS-Runtime, a specified PDF file can be displayed at the timing when an alarm occurs or at a specified timing. Therefore, for example, a PDF file that describes alarm's causes and countermeasures can be displayed when an alarm occurs.

Furthermore, because specified applications can be started up from the NS-Runtime, document data created with those applications and an NS-Runtime project can be displayed at the same time.




Displays a PDF file on a screen

**Reference**

- To display the PDF file, Adobe Reader version 7.0.x must be installed in the operating environment of the NS-Runtime Software.

## 1-2-2 NS-Runtime Specifications

NS-Runtime Specifications are listed below.

| Item | Specifications |
|---|---|
| Screen size | NSA Series: 1024 x 768 dots max.<br>Other than NSA Series: 3840 x 2400 dots max. |
| Connection method with host | Host Link, Ethernet, Controller Link and Toolbus |

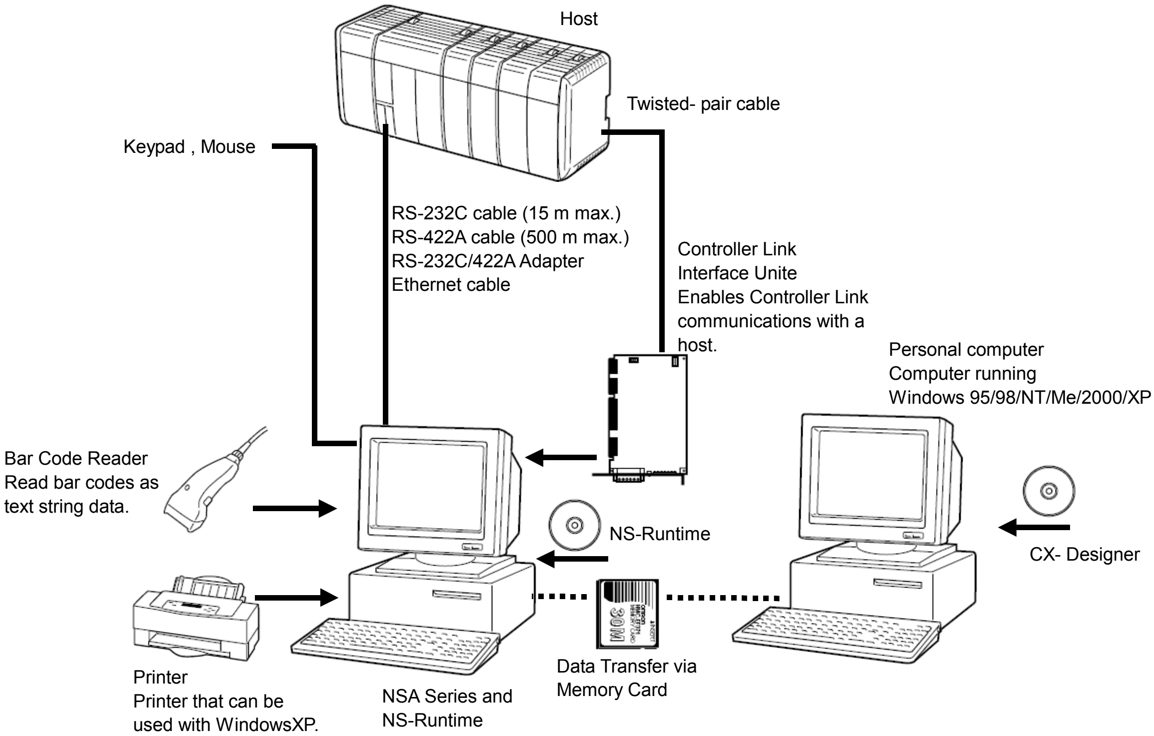
**Reference**

- Communications with non-OMRON PLCs are not supported.
- Methods for connecting to the Host, 1:1 NT Link and 1:N NT Links (Standard, High-Speed) are not supported.
- The NS-Runtime has functionality basically equivalent to that of NS-series PTs. There are some differences, however, depending on differences between the PT and the NS-Runtime environment, including operating system.

## 1-2-3 System Configuration

This section describes the system configuration used for the NS-Runtime.

The NS-Runtime runs on Windows XP and the NSA Series.



# 1-3 CX-Designer Menu List

The NS-Runtime has the following pulldown menus that are different from CX-Designer's. Menus not described here are the same as the existing CX-Designer's menus.

## File Menu

There are following changes in the File Menu.

| Item | Function | Reference |
|---|---|---|
| New project | Creates new projects. The NSA12/15-TX01[] and the NS-Runtime are added.<br>Select the NS-Runtime when using the NS-Runtime in an environment other than NSA Series. | 3-1 |
| Print | Document Table Setting is added to the Print Item Details. | – |
| Data Transfer Security | This menu cannot be used. | – |

- Edit Menu

There is no change in the Edit Menu.

- Find Menu

There is no change in the Find Menu.

- View Menu

There is a following change in the View Menu.

| Item | Function | Reference |
|---|---|---|
| Show Touch Points | This menu cannot be used. | - |

- PT Menu

There are following changes in the PT Menu.

| Item | Function | Reference |
|---|---|---|
| Transfer | When the CX-Designer and NS-Runtime is installed in the same environment, a function to copy project data to the NS-Runtime project storage folder will be added. | 6-1 |
| System Setting | Sets an NS-Runtime's parameter operating.<br><br>The following changes are made.<br>-A folder can be specified to save history data.<br>-Maximum screen size can be set. | 3-2 |
| Alarm/Event Setting | Registers and modifies the alarm/event.<br><br>Setting items for the display document table are added, which enables to show on a document display object when an alarm occurs. | 4-3 |
| Data Log Setting | Always logging can be set up to 160,000 points. | 4-4 |
| Document Table Setting | Registers document files (PDF files) to display on document display objects. | 4-2 |
| Screen/Sheet Properties | Setting ranges were changed as follows.<br>-NSA Series: 1024 x 768 dots max.<br>-Other than NSA Series: 3840 x 2400 dots max. | 3-3 |

- Functional Objects Menu

There are the following changes in the Functional Objects Menu.

| Item | Function | Reference |
|---|---|---|
| Video Display | This menu cannot be used. | - |
| Document Display | This is a newly added functional object that displays specified document files (PDF files). Select this Document Display to start creating. | 4-2 |

- Fixed Objects Menu

There is no change in the Fixed Objects Menu.

- Tools Menu

There is the following change in the Tools Menu.

| Item | Function | Reference |
|---|---|---|
| Convert | An NS-series project can be converted into the NSA12/15-TX01[] or the NS-Runtime. The NS-Runtime is used when using the project data in an environment other than the NSA Series. | 3-5 |

- Window Menu

There is no change in the Window Menu.

- Help Menu

There is no change in the Help Menu.

# 1-4 Comparison between the NS Series and the NS-Runtime

There are the following differences between the NS Series and NS-Runtime.

Functions may differ between when the NS-Runtime runs on the NSA Series and when it runs on an environment other than the NSA Series.

Items related to Hardware, communications and data transfer

| Item | NS Series | NS-Runtime | |
|---|---|---|---|
| | | NSA Series | Other than NSA Series |
| Resolution | 800 X 600 dots max.<br>(When using NS12) | 1024 X 768 dots max. | 3840 X 2400 dots max. |
| Connection Method to the Host | -1:1 NT Link<br>-1:N NT Link (Standard, High-Speed)<br>-Ethernet<br>-Controller Link (When mounting Controller Link I/F unit)<br>-Host Link<br>-Memory Link | -Ethernet<br>-Controller Link (When mounting Controller Link I/F unit)<br>-Host Link<br>-Toolbus | |
| Connection to the Temperature Controller | Provided | Not Provided | |
| Connection to another companies PLCs | -Mitsubishi FX Series PLCs<br>-SIEMENS S7-300 Series PLCs | Not Provided | |
| Connection to the Barcode Reader | Barcode Reader can be connected to Serial Ports. | Barcode Reader can be connected to USB Ports. | |
| Transferring project data to the NS Series/NS-Runtime | -Serial<br>-Ethernet<br>-Modem<br>-Controller Link<br>-USB<br>-Memory Card<br>-Data Transfer using SPMA | -Memory Card<br>-When the CX-Designer and NS-Runtime is installed in the same environment, project data that is being edited can be copied to the NS-Runtime's project storage folder using CX-Designer's transfer function. | |

## Reference

- ◆ Data from other devices can be accessed from an application on a computer by going through the networks. This is referred to as SPMA (Single Port Multi Access).
- ◆ The Controller Link I/F unit needs to be mounted to the NS-Runtime environment before starting to communicate through Controller Link. For details on the Controller Link I/F unit's mounting or setting methods, refer to the manual supplied with the Controller Link I/F unit.

NS-Runtime Overall Operations

| Item | NS Series | NS-Runtime | |
|---|---|---|---|
| | | NSA Series | Other than NSA Series |
| Project Startup | Power ON | - | Executes the NS-Runtime |
| Exiting projects | Power OFF | -Exits from the system menu or by operating screen.<br>-Turns ON the system memory $SB63<br><br>The system menu has below two exit functions.<br>-Exits the NS-Runtime only<br>(Operating system will not end)<br>-Exits the NS-Runtime and operating system. (The system ends.) | |
| Inputting characters and numerals using a hardware keyboard | Not Supported | Possible when a hardware keyboard is mounted. | Supported |

System Menu

| Item | NS Series | NS-Runtime | |
|---|---|---|---|
| | | NSA Series | Other than NSA Series |
| Displaying the system menu | - Press two of four corners on a screen<br>- Start up from a command button<br>- Storing 4002 in $SW0 | -Double click on one of four corners.<br>-Start up from a command button. | |
| Memory card transfer | Provided | Provided | |
| Device monitor | Provided | The CX-Programmer and the Switchbox Utility can start up. | |
| Displaying capture data | Provided | Not Provided | |
| PLC data trace | Provided | The CX-Programmer can start up. | |
| Starting External Applications | Ladder monitor and Programming console can start up. | The CX-Programmer and the Switchbox Utility can start up. | |
| Resizing window | Not Provided | Window can be resized from the system menu. | |
| Exit<br>NS Series/NS-Runtime | Not Provided | The NS-Runtime can be exited from the system menu. | |

System Settings and Project Properties

| Item | NS Series | NS-Runtime | |
|---|---|---|---|
| | | NSA Series | Other than NSA Series |
| Changing value of Device Monitor | Set whether enable/disable to change value from device monitor | The NS-Runtime does not support the device monitor function. | |
| Specifying a save destination of history data | No specification function. | Specify a folder to save data. | |
| Video | Make video display settings including selecting video board | The NS-Runtime does not support the video display function. | |

| Item | NS Series | NS-Runtime | |
|---|---|---|---|
| | | NSA Series | Other than NSA Series |
| Printer Settings | Make settings of a printer to connect with the PT. | No printer setting. (Printer specified with the operating system will be used.) | |
| Pop-up Menu | Show Delimiter is supported | No Show Delimiter function | |

**Reference**

- ◆ The NS-Runtime does not support the Device Monitor. However the CX-Programmer and the Switchbox Utility can be started up from the NS-Runtime. They can be substituted for NS Series Device Monitor, Ladder Monitor and Programming Console.
- ◆ The procedure for installing a printer driver in Windows XP differs from the NSA Series. When using a printer with the NSA Series, please contact your OMRON representative.

Functional Objects and History Functions

| Item | NS Series | NS-Runtime | |
|---|---|---|---|
| | | NSA Series | Other than NSA Series |
| Document Display | - | The Document Display Object can be used with the NS-Runtime to display PDF files.<br>PDF files to be displayed can be registered in the Document Table Setting of the CX-Designer. | |
| Video Display | Provided | Not Provided | |
| Alarm/Event Settings | - | PDF files (document table number) can be specified to display on document display objects when alarms or events occur. | |
| Data Log | Always Logging Points:<br>50,000 points max. | Always Logging Points: 160,000 points max. | |

Macros

| Item | NS Series | NS-Runtime | |
|---|---|---|---|
| | | NSA Series | Other than NSA Series |
| Macro Functions | - | Thirty-one macro functions are added to the NS-Runtime, including the module startup, string manipulation and window manipulation. | |

SAP Library

| Item | NS Series | NS-Runtime | |
|---|---|---|---|
| | | NSA Series | Other than NSA Series |
| Temperature Controllers | - | SAP Library parts that connect to Temperature Controllers through NS direction connections are not supported. | |

**Reference**

- ◆ Normal operation though SAP Library parts may not be possible if the baud rate is too slow. Increase the baud rate if necessary.

System Memory (•: Available, X: Not Available, *: Functions differ)

<table>
<tr><th rowspan="2">Item</th><th rowspan="2">NS Series</th><th colspan="2">NS-Runtime</th></tr>
<tr><th>NSA Series</th><th>Other than NSA Series</th></tr>
<tr><td>$SB4 (Battery Low Notification)</td><td>○</td><td colspan="2">X</td></tr>
<tr><td>$SB6 to $SB8 (Backlight Brightness Adjustment)</td><td>○</td><td>○</td><td>X</td></tr>
<tr><td>$SB9 (Backlight Control)</td><td>○</td><td>○</td><td>X</td></tr>
<tr><td>$SB10 (Backlight Flash Control)</td><td>○</td><td>○</td><td>X</td></tr>
<tr><td>$SB11 (Backlight Status)</td><td>○</td><td>○</td><td>X</td></tr>
<tr><td>$SB12 to $SB 14 (Buzzer)</td><td>○</td><td colspan="2">* Beep Sound</td></tr>
<tr><td>$SB15 (Control of Video)</td><td>○</td><td colspan="2">X</td></tr>
<tr><td>$SB16, $SB17 (Processing Priority Registration)</td><td>○</td><td colspan="2">X</td></tr>
<tr><td>$SB20 to $SB23 (Contrast Adjustment)</td><td>○</td><td colspan="2">X</td></tr>
<tr><td>$SB24 (Video Capture)</td><td>○</td><td colspan="2">X</td></tr>
<tr><td>$SB25 (Start Printing/Capture Screen)</td><td>○</td><td colspan="2">* Windows' desktop will be captured/printed.</td></tr>
<tr><td>$SB26(Stop Printing)</td><td>○</td><td colspan="2">X</td></tr>
<tr><td>$SB27 (Test Pattern Printing)</td><td>○</td><td colspan="2">X</td></tr>
<tr><td>$SB28 (Printer Head Cleaning)</td><td>○</td><td colspan="2">X</td></tr>
<tr><td>$SB29 (Update Printer Status)</td><td>○</td><td colspan="2">X</td></tr>
<tr><td>$SB30 (Printer Busy Status/Capture Busy Status)</td><td>○</td><td colspan="2">X</td></tr>
<tr><td>$SB31(Notification of Printer Error/Capture Screen Error</td><td>○</td><td colspan="2">X</td></tr>
<tr><td>$SB53(Prohibit Starting Screen Saver)</td><td>○</td><td colspan="2">X</td></tr>
<tr><td>$SB63 (Exits NS-Runtime)</td><td>x</td><td colspan="2">○</td></tr>
</table>

# Section 2

## Setting up, Starting up and Exiting the NS-Runtime

The NS-Runtime is application software that runs on Windows XP.

This section describes how to install the NS-Runtime on Windows XP. It also describes methods of starting and exiting the NS-Runtime.

# 2-1 Preparations for Installation

The system requirements for the NS-Runtime when using it in an environment other than the NSA Series are given in the following table.

| Item | Requirement |
|---|---|
| Operating system (OS) | Windows XP |
| CPU | Celeron 1GHz or higher (Recommended) |
| Memory | 256 MB minimum |
| Hard disk | Approx. 50 MB or more available space<br>* When the CX-Server is not installed, 280MB available space is additionally required. |
| Disk Drive | CD-ROM drive |

Install the following software when necessary.

| Item | Details |
|---|---|
| Adobe Reader Ver. 7.0.x | It is necessary when using the document display function. |

**Note**

- When using the document display function, do not install Adobe Acrobat and Adobe Reader (Acrobat Reader) other than version 7.0.x in the NS-Runtime environment.
- For details on the document display, refer to 4-2 Document Display.
- You must be logged in as a user with Administrators or Power Users privileges to use the NS-Runtime and the CX-Designer.

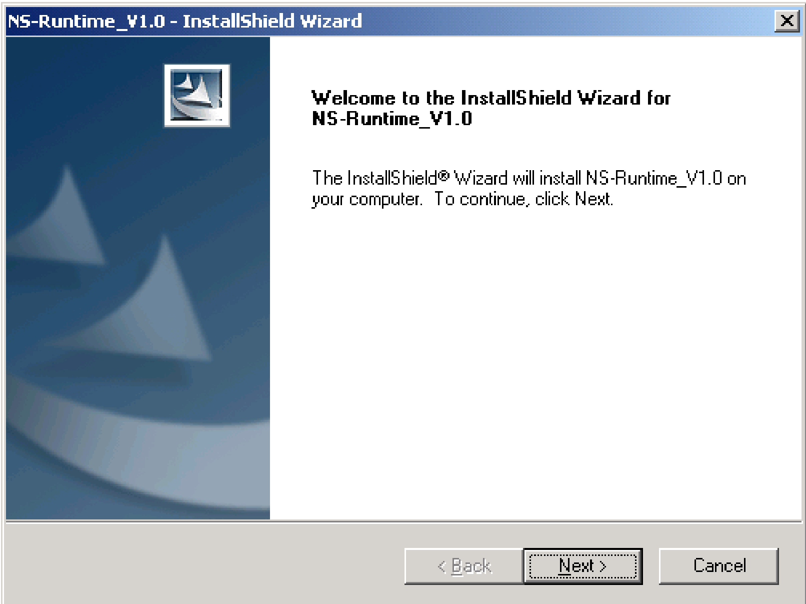
# 2-2 Installing the NS-Runtime

## 2-2-1 Installation Procedure

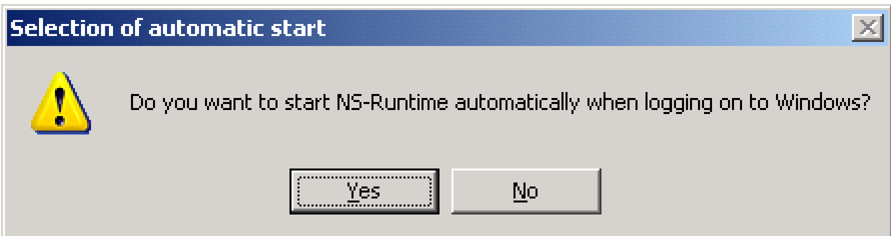
Install the NS-Runtime in the hard disk.

To install the NS-Runtime, execute the installation program provided.

1. Start up Windows XP
2. Close all applications before executing installation.
   Place the NS-Runtime CD-ROM in the CD-ROM drive. The setup program is started automatically.
   If the setup program does not start automatically, such as after executing uninstall, double-click the CD-ROM directory Setup.exe from Windows Explorer to execute the set up program.
3. The NS-Runtime Setup Wizard will be displayed. Install the NS-Runtime by following the instructions in the Setup Wizard.



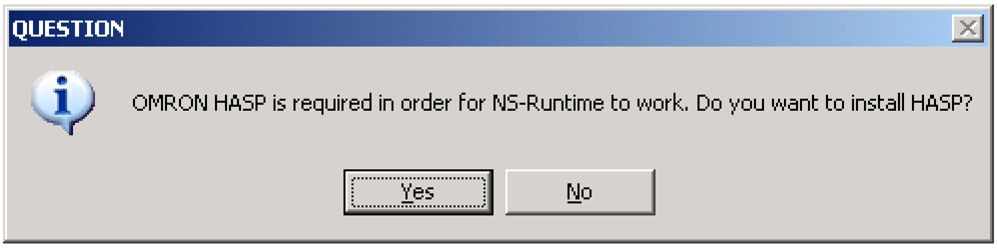

4. When the Setup Wizard is running, a message confirming whether to start up the NS-Runtime automatically when Windows XP starts up. Click the **Yes** Button to start up automatically. When clicking the **No** Button, start up the NS-Runtime according to the procedures described in 2-4 Starting the NS-Runtime.



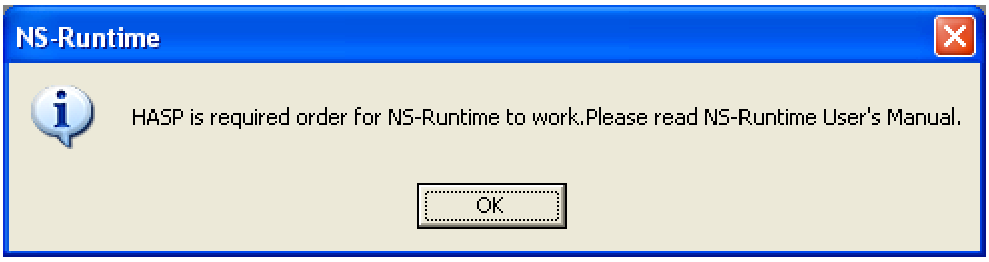
5. A message will be displayed to confirm installation of the CX-Server. Click the **Yes** Button. The CX-Server will be installed. (When the CX-Server has already been installed, this message will not be displayed.)



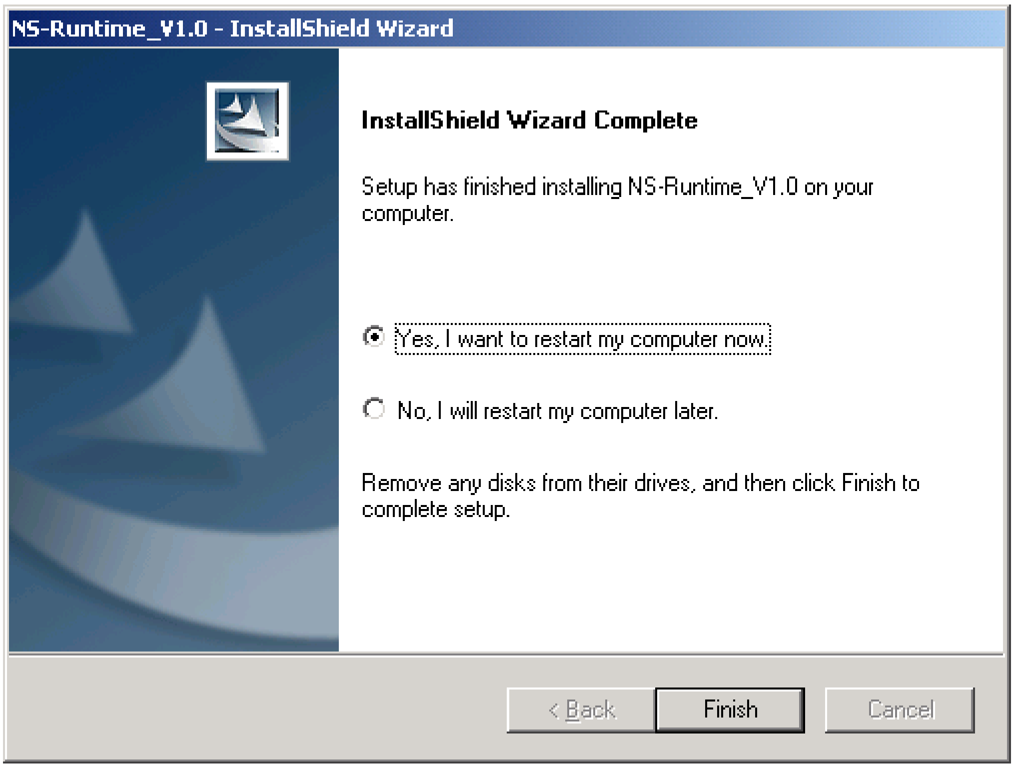

6. A message will be displayed confirming installation of the HASP. Click the **Yes** Button. The HASP Setup Wizard will be displayed. Install the NS-Runtime by following the instructions in the Setup Wizard.




When installing the NS-Runtime in the NSA Series, a message confirming the HASP driver installation will be displayed. Click the **OK** Button. For information on HASP driver installation, refer to 2-2-2 Installing the HASP Driver.



7. When installation has been completed, the following dialog box will be displayed. Select either now or later to restart your computer and click the **Finish** Button. This completes installation. Make sure to restart the computer before using the NS-Runtime.



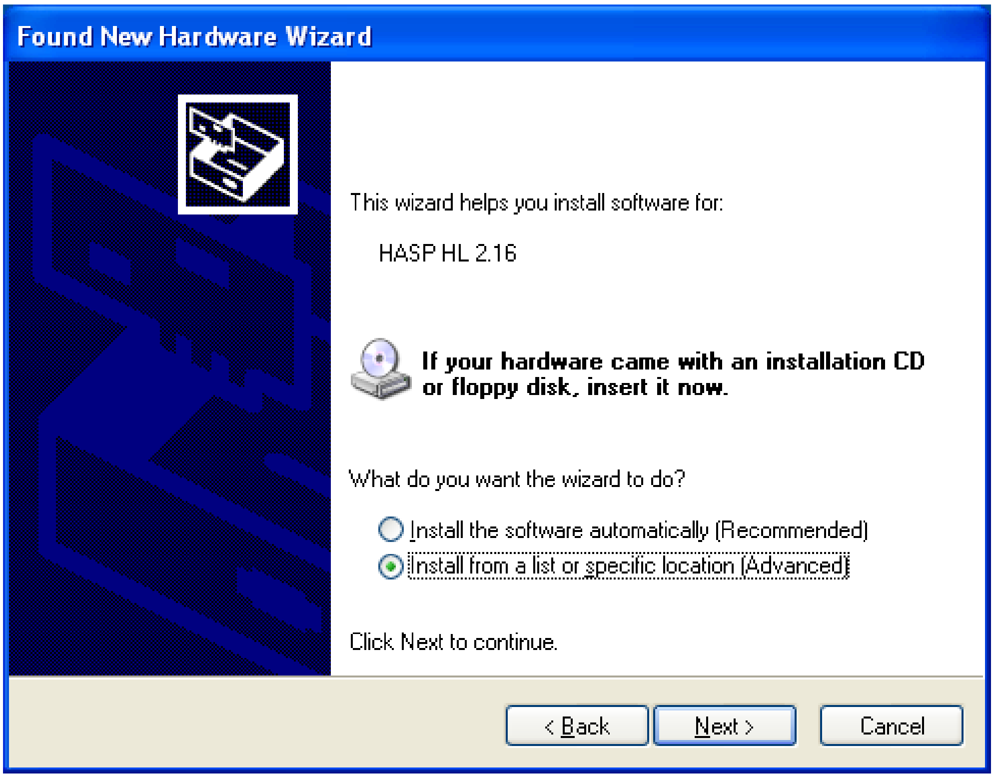
## 2-2-2 Installing the HASP Driver

Installing the HASP driver in the NSA Series.

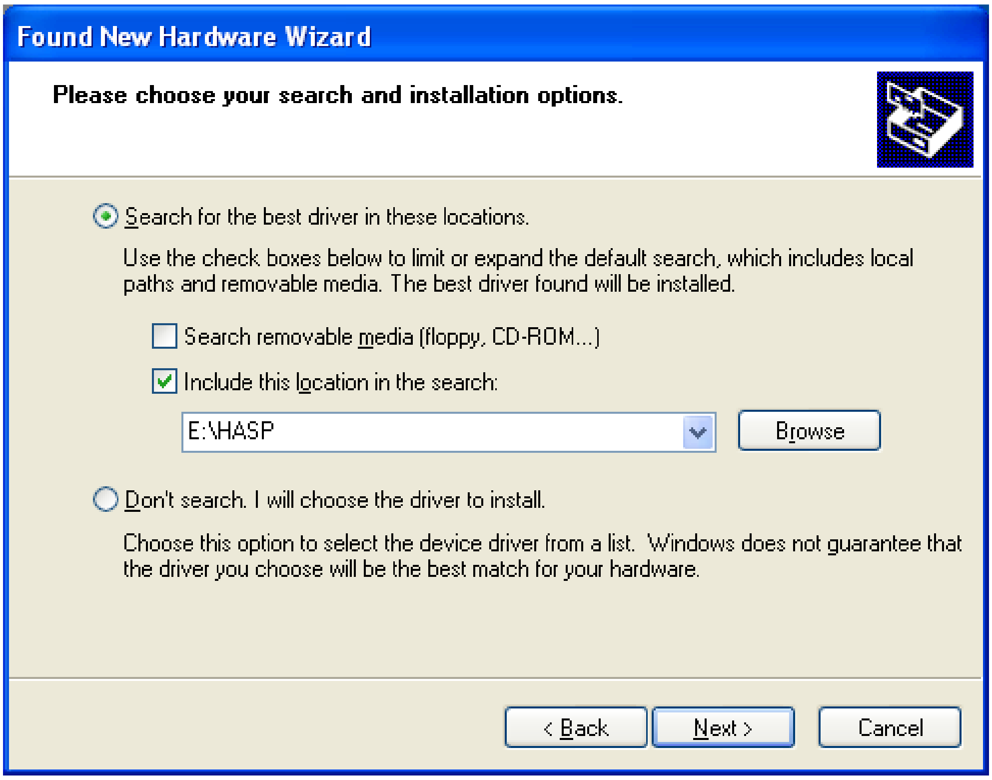
1. If the USB dongle, which is provided with the NS-Runtime, is plugged in the NSA Series, **Found New Hardware Wizard** will be displayed. Select **No,not this time**. Then click the **Next** Button.



2. The following dialog box will be displayed. Select **Install from a list or specific location (Advanced)**. Click the **Next** Button.




3. Check **Include this location in the search** only. Click the **Browse** Button.
   Specify the following directory.
   \A drive where the NS-Runtime installer is inserted\HASP



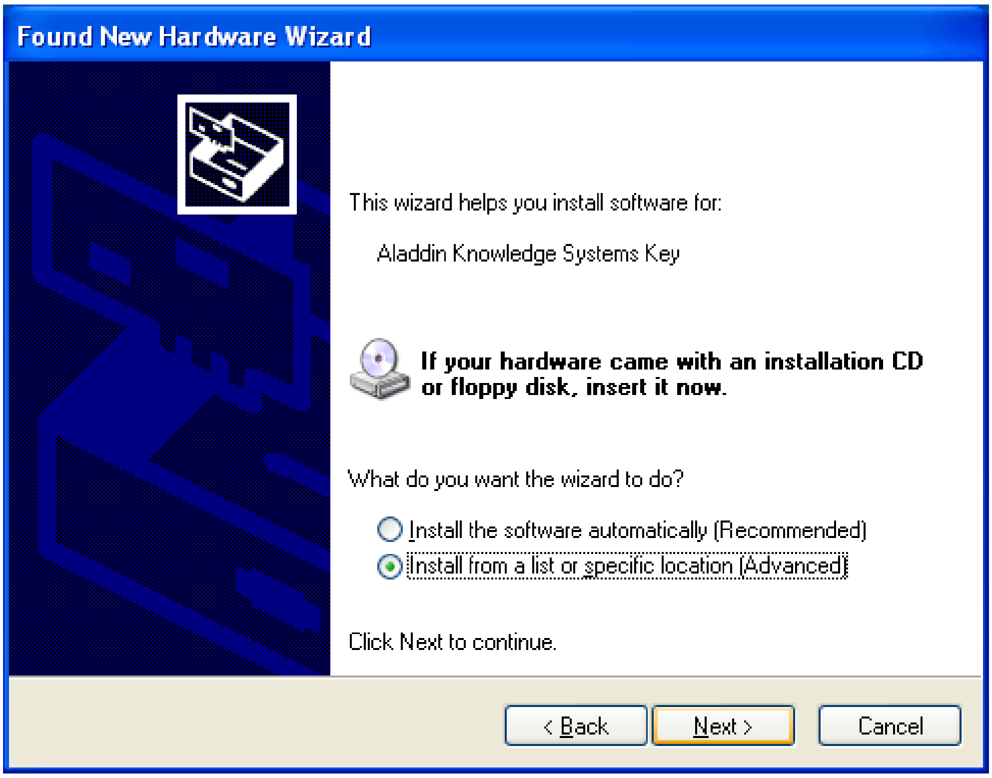
4. Click the **Next** Button. Installation will begin. On completion of installation, the following dialog box will be displayed. Click the **Finish** Button.



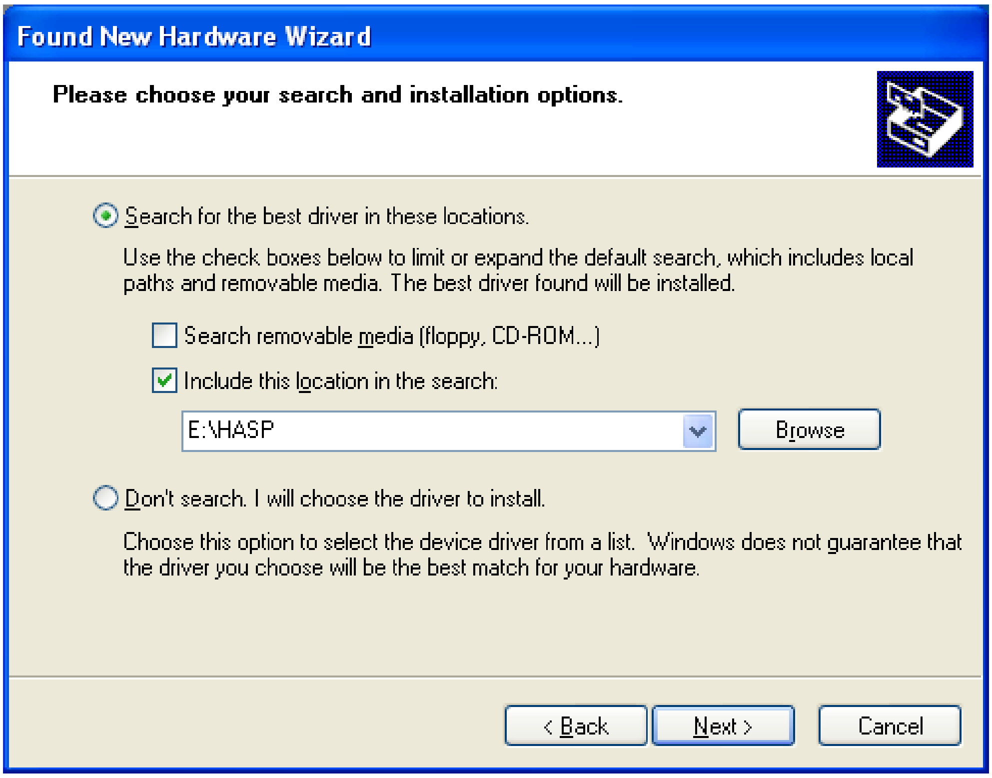

5. **Found New Hardware Wizard** will be displayed again. Click the **Next** Button. Then, select **No, not this time** and click the **Next** Button.



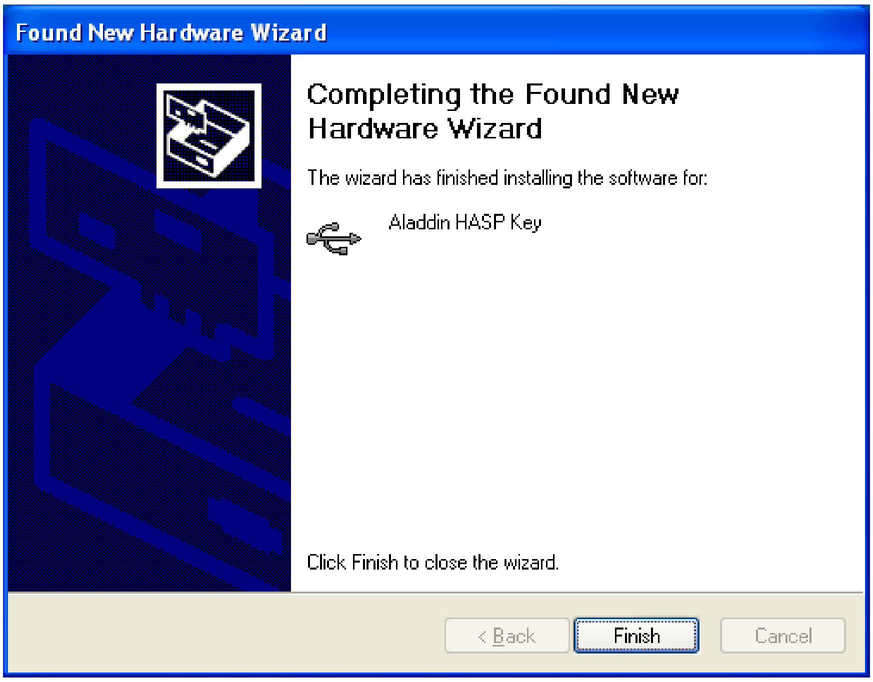
6. The following dialog box will be displayed. Select **Install from a list or specific location (Advanced)** and click the **Next** Button.




7. Check the **Include this location in the search** only. Click the **Browse** Button. Specify the following directory.
   \A drive where the NS-Runtime installer is inserted\HASP



8. Click the **Next** Button. Installation will begin. On completion of installation, the following dialog box will be displayed. Click the **Finish** Button.



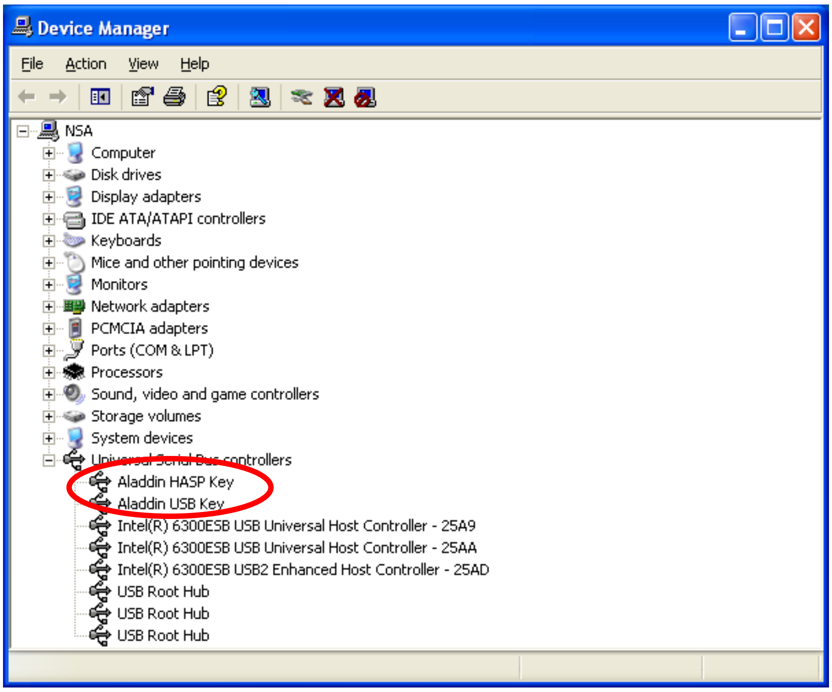

### Reference

◆ Whether the HASP driver has been installed or not can be confirmed from Windows Device Manager.

Please confirm the following are listed in the **Universal Serial Bus controllers**.

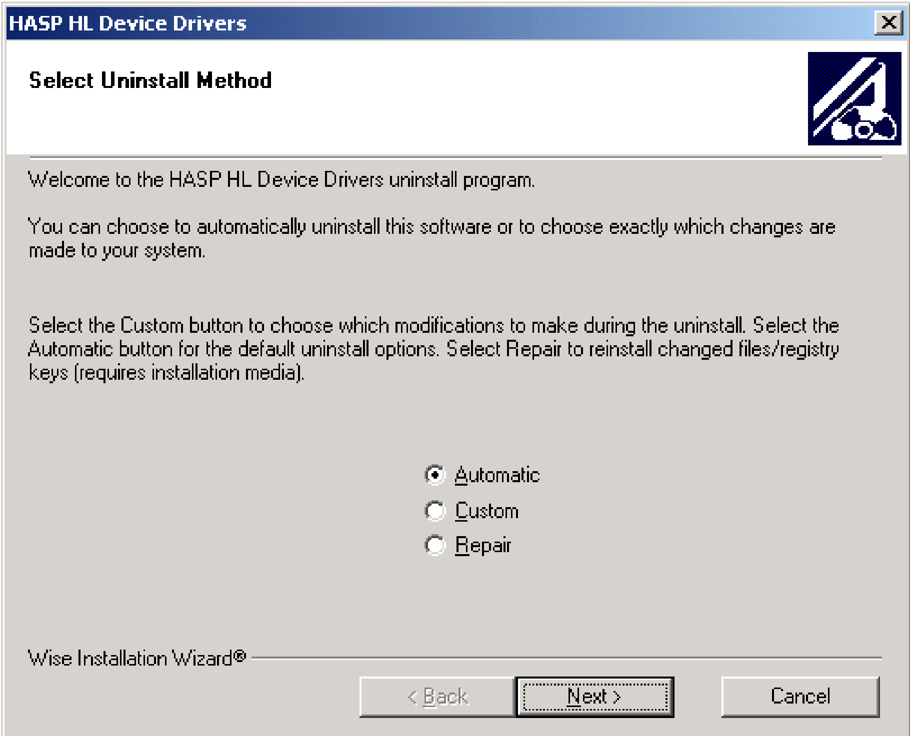
- Aladdin HASP Key

- Aladdin USB Key

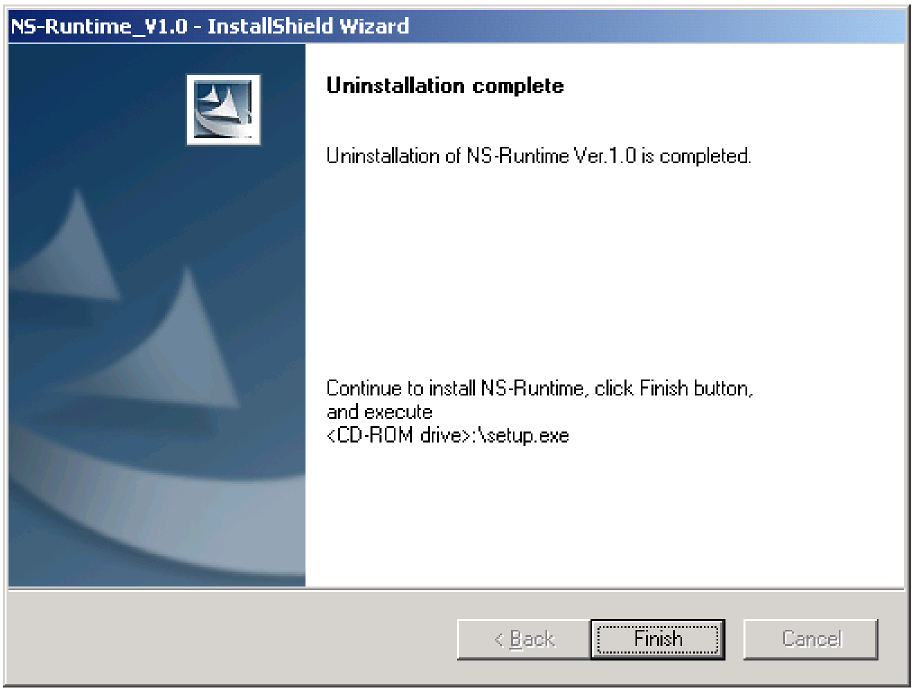


# 2-3 Uninstallation Procedure

1. To uninstall the NS-Runtime, click the Windows **Start** Button and select ***Settings*** – ***Control Panel***.
2. Double-click **Add/Remove Programs**.
3. Select **NS-Runtime_V1.0** from the list and click the **Edit/Delete** Button. Follow the instructions displayed in window messages to uninstall the NS-Runtime.
4. Then, uninstall HASP. Select the **Automatic**. Click the **Next** Button. Follow the instructions displayed in window messages to uninstall HASP.



5. When uninstalling the NS-Runtime has been finished, a message will be displayed indicating that the uninstall operation has been completed. Check the message and then click the **Finish** Button.



# 2-4 Starting the NS-Runtime

## 2-4-1 Starting the NS-Runtime from the NSA Series

Turn ON the power of the NSA Series. The NS-Runtime will automatically start up and a project that was transferred to the NSA Series will open.

***Reference***

- ◆ Refer to 6 Transferring Project Data for information on transferring project data.

## 2-4-2 Starting the NS-Runtime from an environment other than the NSA Series

If the automatic installation was selected when the NS-Runtime was installed, the NS-Runtime starts up when Windows XP starts up. When not using the automatic startup or to start up the NS-Runtime manually, use the following procedure.

1. To start the NS-Runtime, click the Windows **Start** Button, and then select ***Programs*** – ***OMRON*** – ***NS-Runtime*** – ***NS-Runtime.*** (The displayed items may vary according to the program folder specified during installation).
2. The NS-Runtime will start up and transferred project data will automatically opened.

***Note***

- ◆ Connect a USB dongle provided with the NS-Runtime before starting up the NS-Runtime.
- ◆ Refer to 5-4 Transferring Data for information on transferring project data.
- ◆ Only one copy of the NS-Runtime application can be run at one time.

# 2-5 Ending the NS-Runtime

Use one of the following operations to exit the NS-Runtime.

-Exit using the system memory $SB63

-Exit from the system menu.

-Click the **X** Button at the top right of the main window.

-Click the NS-Runtime icon at the top left of the Main Window and select ***Close*** from the displayed Control Menu Box.

-Click the Alt + F4 Keys at the same time.

**Exiting using the system memory $SB63**

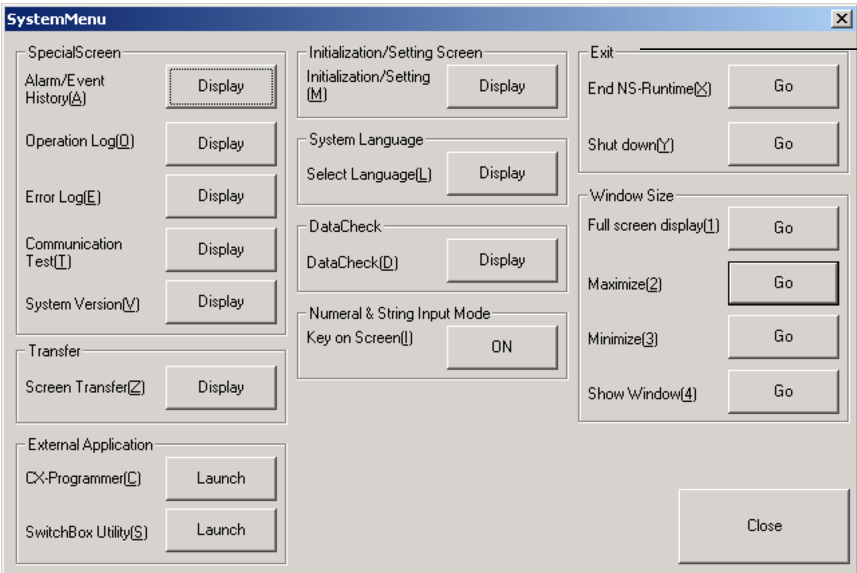
If the $SB63 is turned ON, the NS-Runtime will end.

***Note***

◆ A confirmation dialog box does not appear when exiting the NS-Runtime.

**Exiting from the system menu**

1. Double-click any of the four corners of the NS-Runtime main window. (Press twice in succession when using the NSA Series.)
2. The system menu will be displayed.



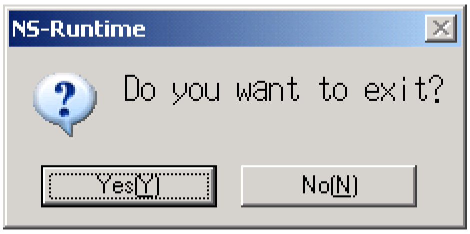

Select End NS-Runtime or Shut Down

3. To exit the NS-Runtime, select the **End NS-Runtime**.

To exit the NS-Runtime and turn OFF the NSA Series, or to exit the operating system, select **Shut Down**.

4. A confirmation message will appear. Select the **Yes** Button. The NS-Runtime ends.

**End NS-Runtime**




**Shut Down**



# 2-6 User Interface

## Main Window

Screens created with the CX-Designer will be displayed.

***Note***

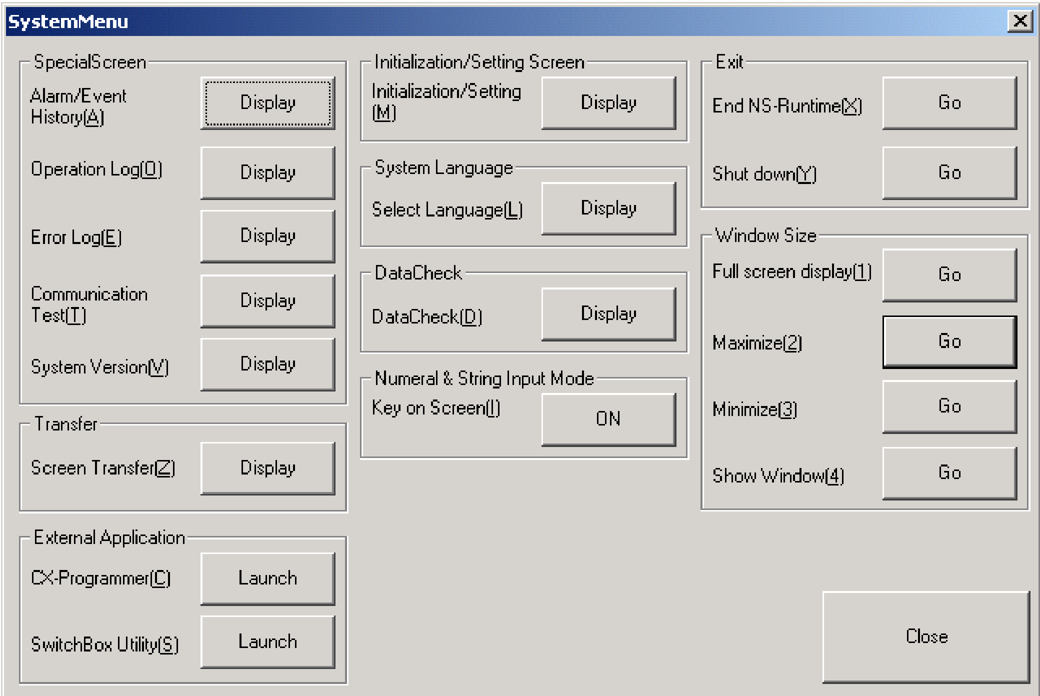
The main window size can be set in the System Setting of the CX-Designer. For details, refer to 3-2 System Settings.

When starting up the NS-Runtime, the main window will be displayed in full screen. From the system menu, main window size can be changed to Full screen display, Maximize, Minimize or Show Window. For details, refer to 5-11 Window Size.

If the main window size is larger than the screen size, the screen part exceeding the window size will be shown in a background color.

## System Menu

The system menu is a menu screen to make settings for the NS-Runtime and transfer screens. Refer to 5 NS-Runtime System Menu Operations for details.



# Section 3

# Creating Projects

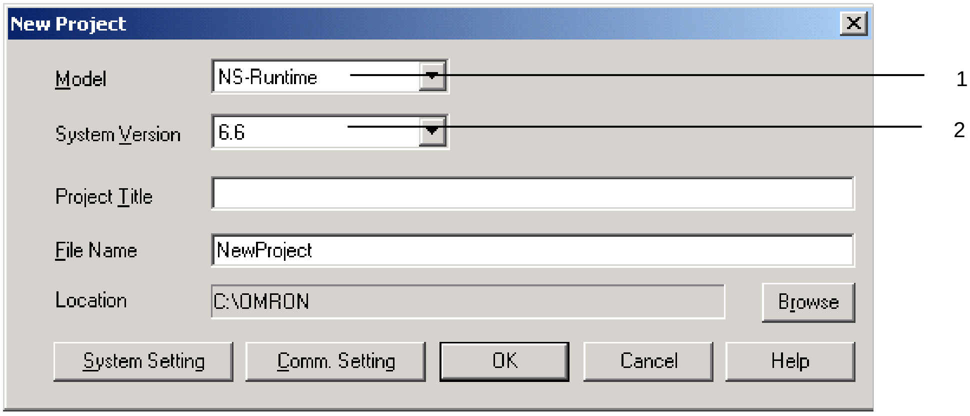
This section describes procedures for creating projects, system settings, communications settings and creating screens for NS-Runtime.

# 3-1 Creating Projects

## 3-1-1 Creating New Projects

This section describes procedures for creating new projects in order to start creation.

1. Select the **File** Menu – **New Project,** or select the **New Project** under the toolbar.
2. New Project Dialog Box will be displayed. Select an NS Series Model and a System Version. Click the **OK** Button.
   Select the NSA12/15-TX01[] or NS-Runtime from the Model and the 6.6 or later from the System Version to use it with the NS-Runtime.




| No | Item | Description |
|---|---|---|
| 1 | Model | Select the NSA12/15-TX01[] or the NS-Runtime to create an NS-Runtime targeted project.<br>Select the NS-Runtime when using the NS-Runtime in an environment other than the NSA Series. |
| 2 | System Version | Select the 6.6 or later to create a project for the NS-Runtime. |

***Reference***

- ◆ When the NSA12/15-TX01[] or the NS-Runtime is chosen from the Model, the System Version 6.6 or later can only be selected.
- ◆ When creating a project for other PT models, refer to the Creating Projects in the CX-Designer Online Help.

3. New Screen Dialog Box will be displayed. Input the screen number and title. Click the **OK** Button.
4. When a new screen is opened, start creating a screen.

***Reference***

- ◆ When using the NS-Runtime in an environment other than the NSA Series, set the NS-Runtime's main window size from the System Setting Dialog Box. For further information, please refer to 3-2 System Settings.

  For the NSA Series, the main window size is fixed at 1024 x 768 dots.

## 3-1-2 Project Property settings

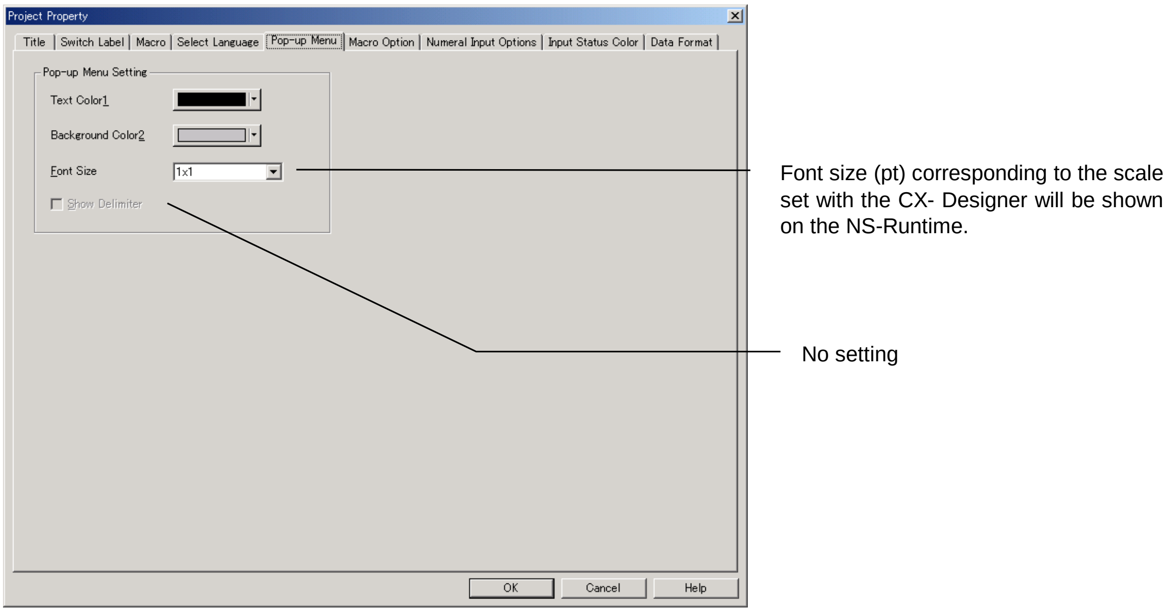
Regarding the Project Property Dialog Box (PT Menu– Project Properties Menu), the following settings are different from those of the NS Series.

With the NS-Runtime the Pop-Up Menu is displayed in MS Sans Serif (When the system language is English) or MS P Gothic (When the system language is Japanese).

The relationships between font size settings with the CX-Designer and font sizes used with the NS-Runtime are as follows.

| Font size set with the CX-Designer | Font size displayed on the NS-Runtime |
|---|---|
| 1 x 1 | 16 pt |
| 1 x 2 | |
| 2 x 1 | 24 pt |
| 2 x 2 | |
| 3 x 3 | 36 pt |
| 4 x 4 | 60 pt |
| 8 x 8 | 96 pt |

Delimiter is not shown. Therefore, there is no setting for the delimiter in the Pop-up Menu Tab Page.




Other setting items are the same as those for the NS Series. For details on each item, refer to the System Settings and Project Properties in the CX-Designer Online Help.

# 3-2 System Settings

This section describes methods for setting the NS-Runtime Operating parameter.

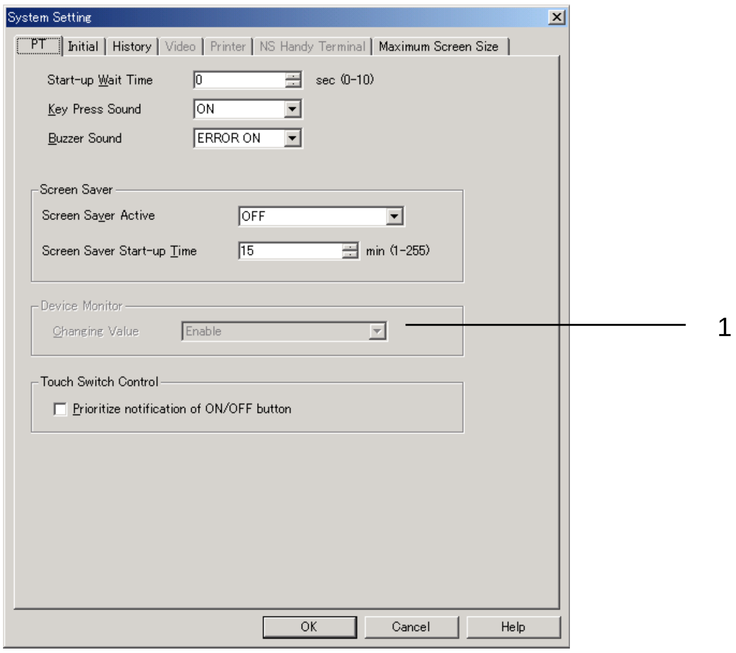
Only Items different from NS Series system settings are explained here. For the setting items common to the NS Series, please refer to the System Settings and Project Properties in the CX-Designer Online Help.

Display System Setting Dialog Box in the following procedure.

1. Select PT Menu – System Setting.
2. System Setting Dialog Box will be displayed.

## 3-2-1 PT Operations

Select **PT Tab**.

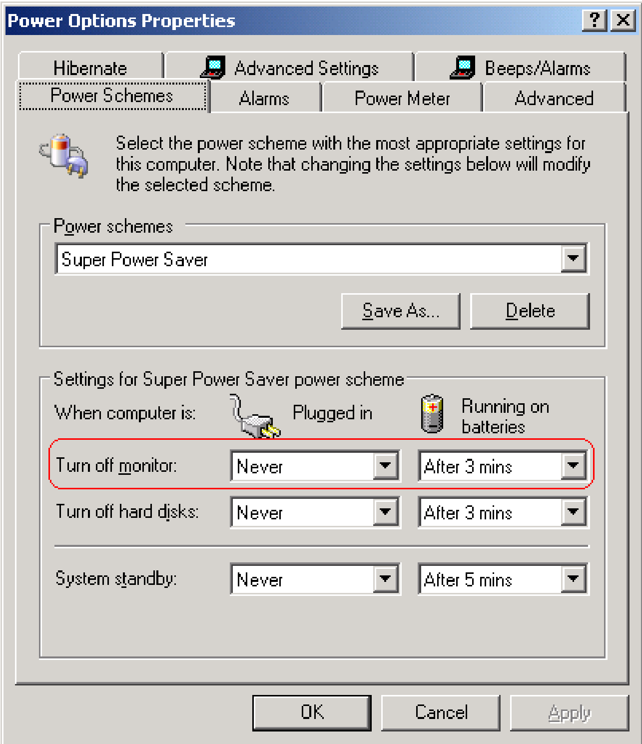



| No | Item | Description |
|---|---|---|
| 1 | Device Monitor Changing Value | The NS-Runtime does not the support Device Monitor function. Therefore, no setting is required for the Changing Value. |

## Reference

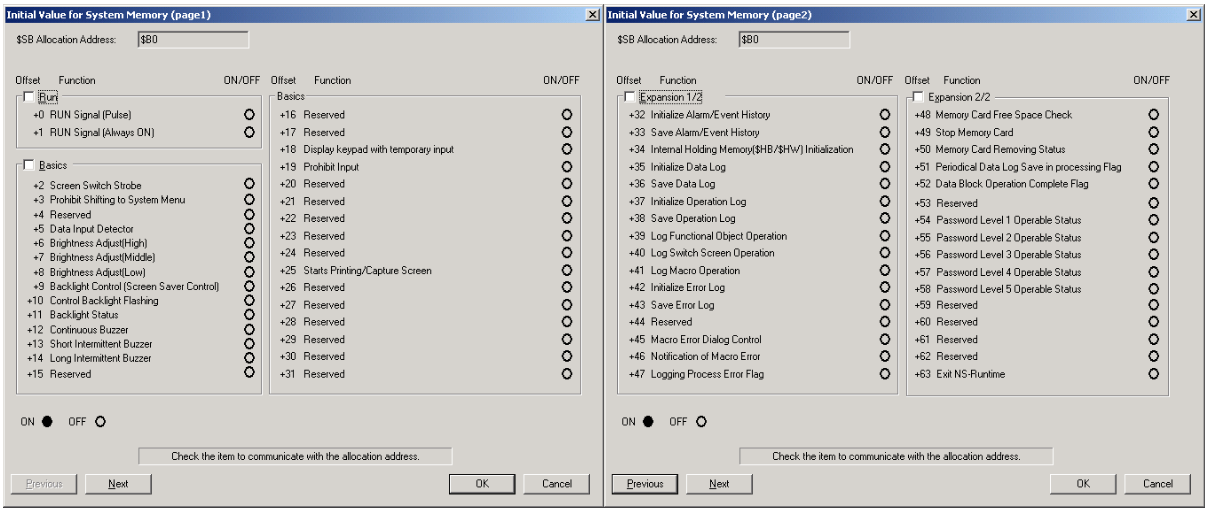
- The NS-Runtime does not support the Device Monitor. However, the CX-Programmer and the SwitchBox Utility can start up from the system menu and they can be alternatively used as functions of Device Monitor, Ladder Monitor and Programming Console.
- When the NS-Runtime starts up, Windows' Power Options setting will be changed according to the Screen Saver settings of a project that is opened.

  In order to change the power options settings after using the NS-Runtime, select the **Control Panel** – **Power Options** from Windows. Then select the **Power Options Properties Dialog Box** – **Power Schemes Tab Page** and change the Turn off monitor settings.



## 3-2-2 Initial Tab Page

Click the **Initial** Tab – **System Memory List** Button. The Initial Value for System Memory Dialog Box will be displayed.



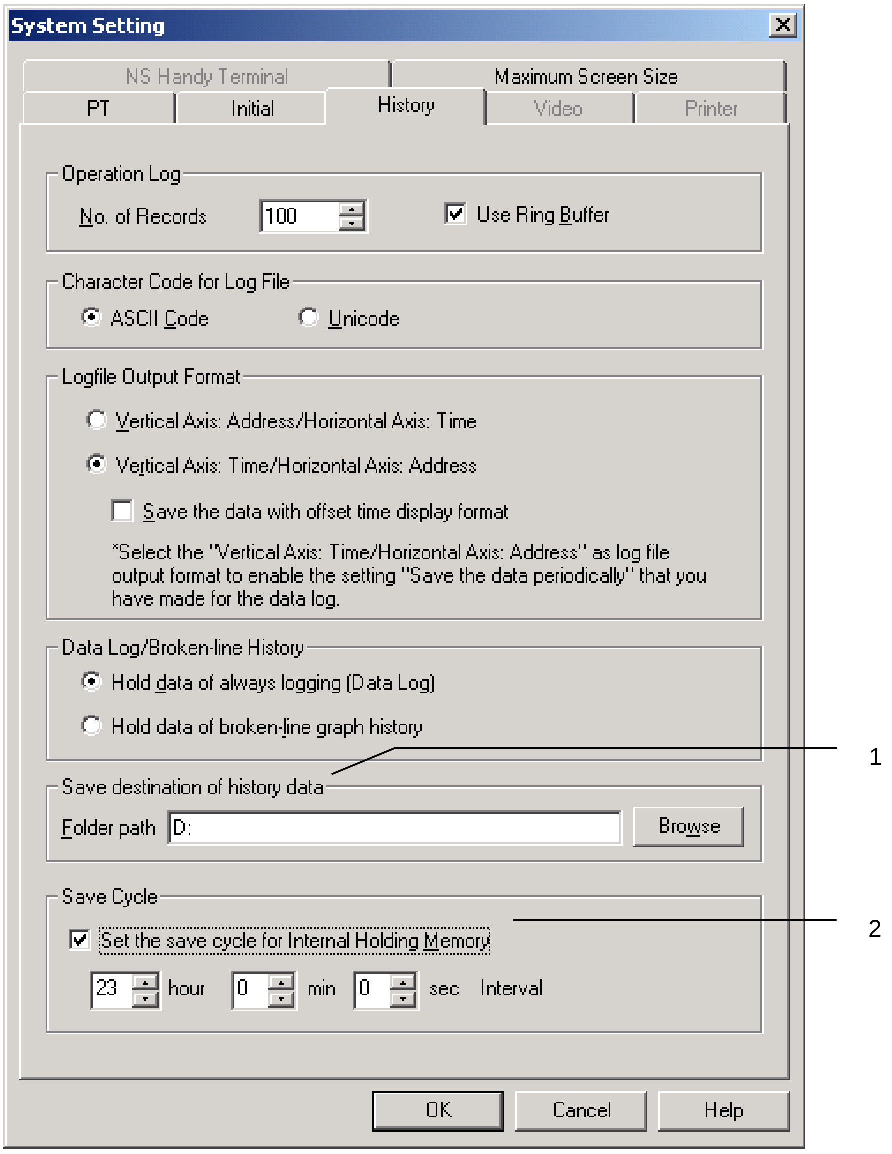

If these options are selected, system memory in each field will communicate with the allocation addresses set in the Initial Tab Page.

Setting methods are the same as those for the NS Series. However, $SB that can be used for the NS-Runtime is different from those for the NS Series. For information on the usable $SB, refer to 4-1 System Memory.

## 3-2-3 History Tab Page

Specifying a folder to save history data with an NS-Runtime project.

Select **History Tab**.




| No | Item | Description |
|---|---|---|
| 1 | Save destination of history data | Specify a folder to save Operation Log, Alarm History, Data Log and Error Log.<br>Specify a folder of up to 160 characters. |
| 2 | Set the save cycle for Internal Holding Memory | Deselect this option to save when the NS-Runtime ends.<br>Select this option to save $HB/$HW status and each history data at a specified interval.<br>Set the Save Cycle to between one second to 24 hours 0 second 0 minute.<br>No need to set the Save Cycle in a normal situation but set this when there is a possibility of not ending the NS-Runtime environment normally. |

**MEMO**

- Saved $HB/$HW status and each logging data will be automatically read when the NS-Runtime starts up next time.
- A folder specified as a save destination of history data is used in the following purposes as well.

  -Destination to save BMP files created by $SB25(Screen capture).

  -Destination to save data files to be used for data blocks (When the Memory Card is selected as a destination to read/write data files).

  -Destination to save files specified with READCF/WRITECF macro.
- Even when the *Set the 'save cycle for Internal Holding Memory'* is specified, $HB, $HW and history data will be saved when the NS-Runtime ends.

## 3-2-4 Printer Tab Page

There is no Printer Tab with an NS-Runtime project, because a printer set with Windows will be used.

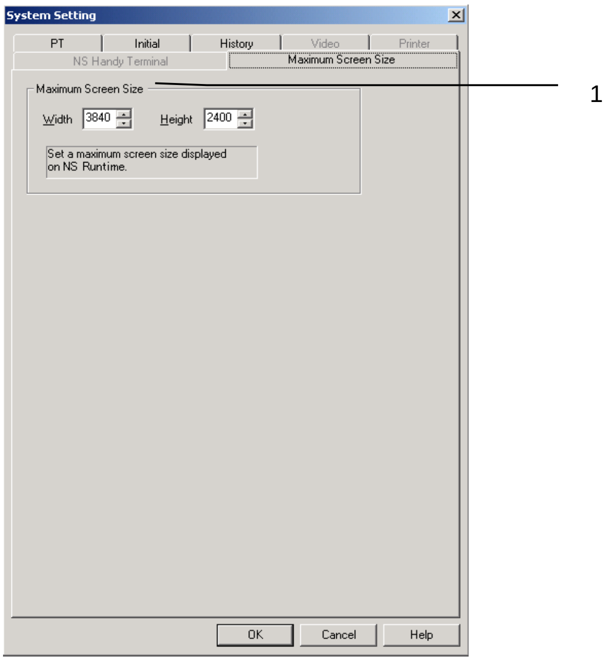
## 3-2-5 Video Tab Page

There is no Video Tab because the NS-Runtime does not support video display.

## 3-2-6 Maximum Screen Size Tab Page

Setting the NS-Runtime main window size in the Maximum Screen Size.

Use this function when using the NS-Runtime in non-NSA Series environments.



| No | Item | Details |
|---|---|---|
| 1 | Maximum Screen Size | Set the main window size of the NS-Runtime.<br>Width: 1 to 3,840 dots, Height: 1 to 2,400 dots |

Changed screen/sheet size will be modified as follows.

| Before change | After change |
|---|---|
| Screen/sheet for which a size exceeding the Width/Height have been set. | The size will be changed to the Width/Height set in the Maximum Screen Size. |
| Screen/sheet for which a size not exceeding the Width/Height have been set. | The screen size will not be changed. |

# 3-3 Communications Settings

The methods for setting the communications with the host are described here.

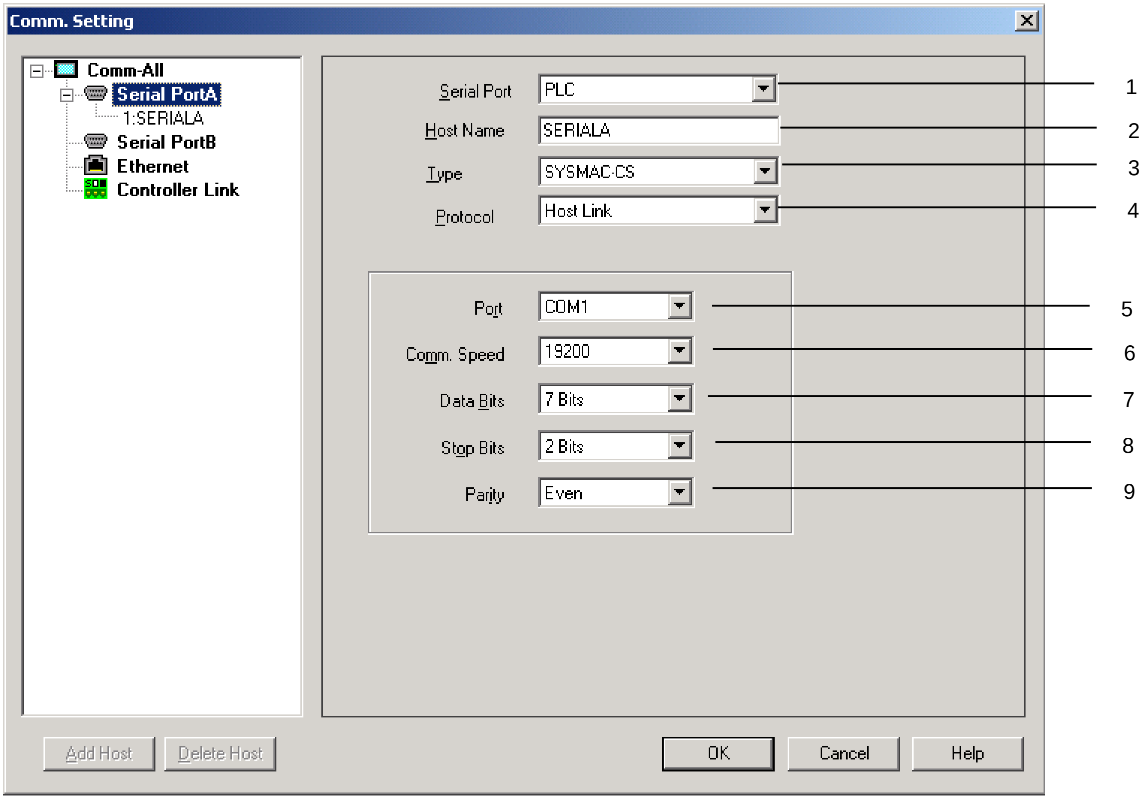
The NS-Runtime can communicate to the host through Serial Port A / Serial Port B (Host link, toolbus), Ethernet and Controller Link.

1. Select the PT Menu – Communication Setting
2. Comm. Setting Dialog Box will be displayed.

## 3-3-1 Serial Port A / Serial Port B

Serial Port A / Serial Port B can communicate by means of the host link and toolbus methods.

1. Select Serial Port A and Serial Port B in the Comm.Setting Dialog Box.

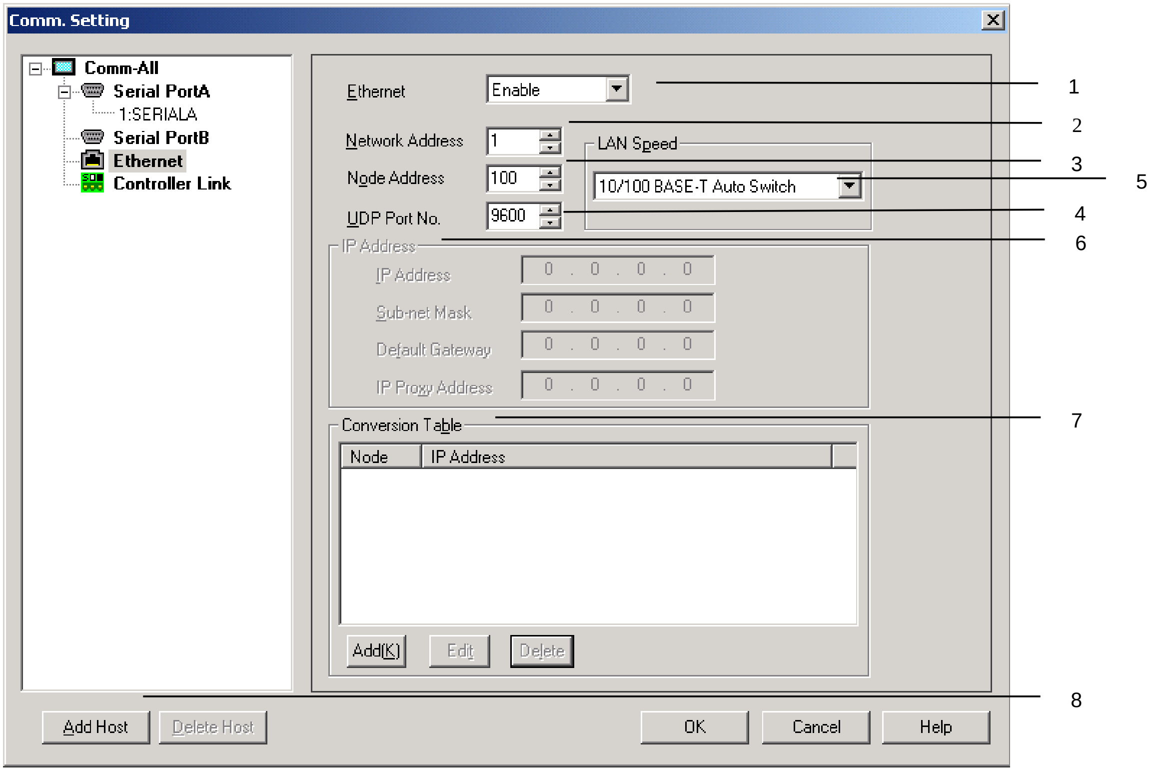



| No. | Item | Description |
|---|---|---|
| 1 | Serial Port | Set the PLC when using a Serial Port. |
| 2 | Host Name | Set any host name. |
| 3 | Type | Select SYSMAC-CS or SYSMAC-CJ. |
| 4 | Protocol | Select Host Link or toolbus. |
| 5 | Port | Set a COM port name that is used for communicating in the NS-Runtime environment. |
| 6 | Comm. Speed | Set 19200, 38400, 57600 or 115200 for the baud rate. |
| 7 | Data Bits | When setting Host Link for the Protocol, set 4 Bits, 5 Bits, 6 Bits, 7 Bits or 8 Bits for the data bits. |
| 8 | Stop Bits | When setting Host Link for the Protocol, set 1 bit or 2 bits for the stop bit length. |
| 9 | Parity | When setting Host Link for the Protocol, set Even, Odd, None, Mark or Space for the parity bits. |

## 3-3-2 Ethernet

Making settings for Ethernet communications.

1. Select the Ethernet in the Comm. Setting Dialog Box.

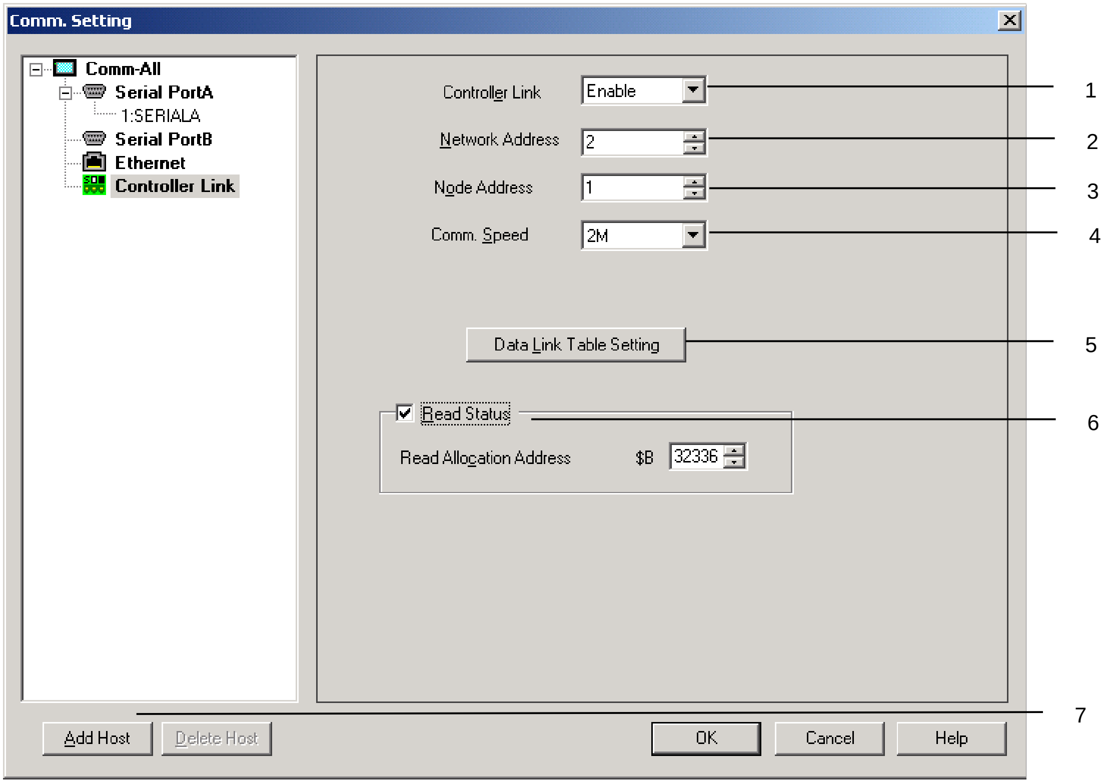



| No. | Item | Description |
|---|---|---|
| 1 | Ethernet | Select the Enable when communicating through Ethernet. |
| 2 | Network Address | Set the Network Address to between 1 and 127. |
| 3 | Node Address | Set the Node Address to between 1 and 254. |
| 4 | UDP Port No. | Set the UDP port number between 1024 and 65535. |
| 5 | LAN Speed | Set 10/100BASE-T Auto Switch or 10BASE-T (fixed) for the speed setting method for the Ethernet. |
| 6 | IP Address | IP Address cannot be set with the CX-Designer. Communications will be performed using the IP Address set in the NS-Runtime environment. |
| 7 | Conversion Table | Show a table of conversion from FINS Node Address to IP Address when communicating through Ethernet. |
| 8 | Add Host | Add hosts. Sets the host name, host type, network address and node address for the host. |

## 3-3-3 Controller Link

Making settings for Controller Link communications.

1. Select the Controller Link in the Comm. Setting Dialog Box.




| No. | Item | Details |
|---|---|---|
| 1 | Controller Link | Select the Enable when communicating through the Ethernet. |
| 2 | Network Address | Set the Network Address to between 1 and 127. |
| 3 | Node Address | Set the Node Address to between 1 and 32. |
| 4 | Comm. Speed | Set the baud rate (bbs) to 500k, 1M or 2M. |
| 5 | Data Link Table Setting | Specify the data link table. |
| 6 | Read Status | Select this option when reading the status of controller link. Then set the read allocation address to a multiple of 16 within a range of $B0 to $B32336. |
| 7 | Add Host | Add hosts.<br>Set the host name, host type, network address and node address for hosts. |

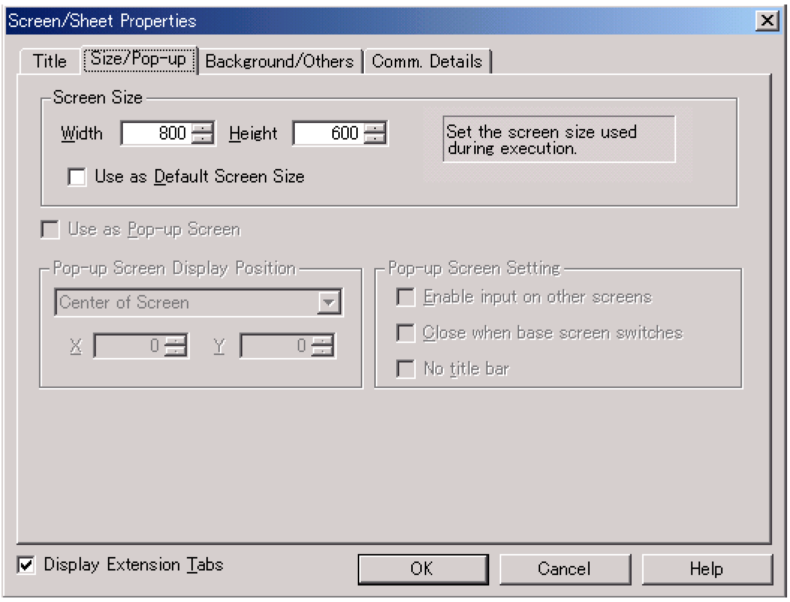
# 3-4 Creating Screens

## 3-4-1 Creating New Screens

1. Select the **File** Menu – **New Screen** or click the **New Screen** in the Toolbar.
2. New Screen Dialog Box will be displayed. Set the screen number and title. Click the **OK** Button.
3. A new screen will be displayed.

## 3-4-2 Screen Properties Setting

The following settings in the Screen Properties Dialog Box (PT-Screen/Sheet Properties) differ from those of the NS Series. The setting range depends on the NS-Runtime environment.




| No | Item | Description |
|---|---|---|
| 1 | Screen Size | Set the screen size displayed on the NS-Runtime.<br>Screen size that can be set depends on the NS-Runtime environment.<br>-NSA Series: 1024 x 768 (dot) max.<br>-Other than NSA Series: 3840 x 2400 (dot) max.<br>Note:<br>Users cannot create a screen whose size exceeds the NS-Runtime's main window size set in the System Setting Dialog Box. |

Other Items are the same as those for the NS Series. For details refer to the Creating Screens in the CX-Designer Online Help.

# 3-5 Converting Projects

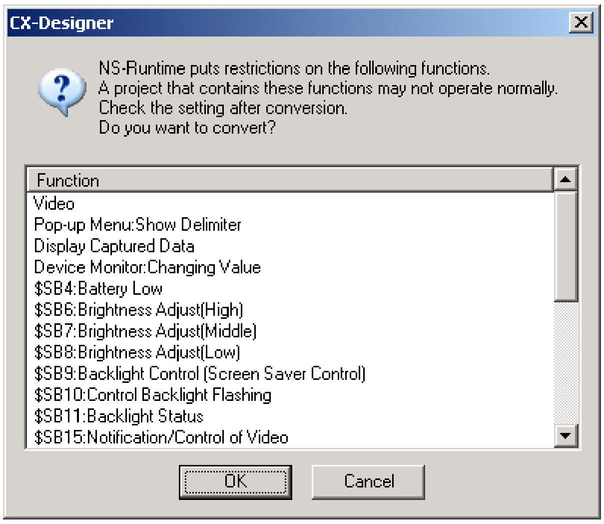
Converting projects to supported PT models.

**Note**

- To convert projects from the NS Series (NS12/10/8/7/5, NSJ12/10/8/5, NSH5) to the NS-Runtime (NSA Series and NS-Runtime), projects before conversion must be version 6.6 or later.

  When converting projects whose versions are earlier than version 6.6, change the project versions into version 6.6 or higher the **Tools** Menu – **Convert** – **Version**.
- Project models cannot be converted from the NS-Runtime (NSA Series and NS-Runtime) to the NS Series.

1. Select the Tools Menu – Convert – Model – NSA12/15-TX01[] or NS-Runtime.
2. Messages will be displayed to confirm the functional differences between NS Series and NS-Runtime. Check the information and if you still want to convert, click the OK Button.




4. Specify a name for the converted project in the Convert to Dialog Box. Click the ***Save*** Button to convert the model.

After the PT models are converted, the screens will be resized as listed below.

| Model before conversion | Model after conversion | Screen Size |
|---|---|---|
| NS-Runtime | NSA Series | Base screens will be resized to 1024 x 768 dots. (Pop-up windows larger than 1024 x 768 dots will be converted to 1024 x 768 dots.) |
| NSA Series | NS-Runtime | Base screens will be resized to 3,840 x 2,400 dots. |
| NS12 | NSA Series | Base screens will be resized to 1024 x 768 dots. |
| | NS-Runtime | Base screens will be resized to 3,840 x 2,400 dots. |
| NS10 | NSA Series | Base screens will be resized to 1024 x 768 dots. |
| | NS-Runtime | Base screens will be resized to 3,840 x 2,400 dots. |
| NS8 | NSA Series | Base screens will be resized to 1024 x 768 dots. |
| | NS-Runtime | Base screens will be resized to 3,840 x 2,400 dots. |

| Model before conversion | Model after conversion | Screen Size |
|---|---|---|
| NS5-SQ/TQ | NSA Series | Base screens will be resized to 1024 x 768 dots. |
| | NS-Runtime | Base screens will be resized to 3,840 x 2,400 dots. |
| NS5-MQ | NSA Series | Base screens will be resized to 1024 x 768 dots. |
| | NS-Runtime | Base screens will be resized to 3,840 x 2,400 dots. |
| NSJ12 | NSA Series | Base screens will be resized to 1024 x 768 dots. |
| | NS-Runtime | Base screens will be resized to 3,840 x 2,400 dots. |
| NSJ10 | NSA Series | Base screens will be resized to 1024 x 768 dots. |
| | NS-Runtime | Base screens will be resized to 3,840 x 2,400 dots. |
| NSJ8 | NSA Series | Base screens will be resized to 1024 x 768 dots. |
| | NS-Runtime | Base screens will be resized to 3,840 x 2,400 dots. |
| NSJ5-SQ/TQ | NSA Series | Base screens will be resized to 1024 x 768 dots. |
| | NS-Runtime | Base screens will be resized to 3,840 x 2,400 dots. |
| NSH5-SQ | NSA Series | Base screens will be resized to 1024 x 768 dots. |
| | NS-Runtime | Base screens will be resized to 3,840 x 2,400 dots. |

The communications settings of the hosts of the serial port A and B will be changed as follows.

| Before Conversion | | After Conversion |
|---|---|---|
| Host Type | SYSMAC-PLC | SYSMAC-CS |
| | Others | Cannot convert |
| Protocol | Host Link | Host Link |
| | NT Link (1:1) | |
| | NT Link (1:N) | |
| | Others | Cannot convert |
| Port Name | - | Serial Port A : COM1<br>Serial Port B : COM2 |
| Comm. Speed | - | 19200 |
| Data Bit | - | 7 |
| Stop Bit | - | 2 |
| Parity | - | Even |

There is no change in settings of the hosts of Ethernet and Controller Link.

For the Ethernet, however, the NS Series PT's IP address setting will be deleted.
The NS-Runtime will communicate using the IP address set for the operating environment.

**Note**

- Although screen data for the NS5-MQ0[]-V2 is displayed in 16 grayscale levels on the CX-Designer displays and the NS5-MQ0[]-V2 screen, the data will be displayed in color if it is converted to data for a PT model with color displays on the CX-Designer or transferred to a PT with a color display screen. The color codes that are used when creating the screen data for the NS5-MQ0[]-V2 will be displayed for screen data and the image colors will be used for BMP and JPEG data.
- In order to change the main window size (Maximum Window Size) of the NS-Runtime after converting the model into the NS-Runtime, change the setting from the Maximum Screen Size Tab Page in the System Setting Dialog Box (PT Menu – System Setting). For further information, refer to 3-2 System Settings
- Always confirm the communications settings after conversion. Then change the settings according to the operating environment. For the details on communications settings, refer to 3-3 Communications Settings.

# Section 4

# NS-Runtime Functions

This section describes the NS-Runtime functions.

It mainly describes functions that are added or changed from the NS Series and the CX-Designer, and does not describe functions equivalent to those of the NS Series and the CX-Designer.

For NS Series and CX-Designer functions that this manual does not describe, refer to each manual mentioned in 1-1 About This Manual.

# 4-1 System Memory

The NS-Runtime is provided with system memory that is used for exchanging information between the host and the NS-Runtime, such as for controlling the NS-Runtime and notifying the status. The system memory is divided into bit and word sections.

## 4-1-1 System Bit Memory ($SB)

System bit memory is used to exchange information between the host and NS-Runtime, such as for controlling the NS-Runtime and notifying the host of NS-Runtime status, in bit units.

The system bit memory contains 64 bits with predefined functions.

The system bit memory is listed in the following table.

| Address | Classification | Function | NSA Series | Non-NSA Series |
|---|---|---|---|---|
| $SB0 | Notification | Operation Signal (Pulse) | OK | OK |
| $SB1 | Notification | RUN Signal (Always ON) | OK | OK |
| $SB2 | Notification | Screen Switch Strobe | OK | OK |
| $SB3 | Control | Prohibit Shifting to System Menu | OK | OK |
| $SB4 | - | Reserved | NO | NO |
| $SB5 | Notification | Numeral and Character Input Detection | OK | OK |
| $SB6 | Control | Backlight Brightness Adjustment (High) | OK | NO |
| $SB7 | Control | Backlight Brightness Adjustment (Medium) | OK | NO |
| $SB8 | Control | Backlight Brightness Adjustment (Low) | OK | NO |
| $SB9 | Control | Backlight Control (Screen Saver Start/Cancel) | OK | NO |
| $SB10 | Control | Backlight Flash Control | OK | NO |
| $SB11 | Notification | Backlight Status | OK | NO |
| $SB12 | Control | Continuous Buzzer | OK | OK |
| $SB13 | Control | Short Intermittent Buzzer | OK | OK |
| $SB14 | Control | Long Intermittent Buzzer | OK | OK |
| $SB15 | - | Reserved | NO | NO |
| $SB16 | - | Reserved | NO | NO |
| $SB17 | - | Reserved | NO | NO |
| $SB18 | Control | Display Keypad with Temporary Input | OK | OK |
| $SB19 | Control | Prohibit Input | OK | OK |
| $SB20 | - | Reserved | NO | NO |
| $SB21 | - | Reserved | NO | NO |
| $SB22 | - | Reserved | NO | NO |
| $SB23 | - | Reserved | NO | NO |
| $SB24 | - | Reserved | NO | NO |
| $SB25 | Control | Start Printing/Capture Screen | OK | OK |
| $SB26 | - | Reserved | NO | NO |
| $SB27 | - | Reserved | NO | NO |
| $SB28 | - | Reserved | NO | NO |
| $SB29 | - | Reserved | NO | NO |
| $SB30 | - | Reserved | NO | NO |
| $SB31 | - | Reserved | NO | NO |
| $SB32 | Notification/Control | Initialize Alarm/Event History | OK | OK |
| $SB33 | Notification/Control | Save Alarm/Event History | OK | OK |
| $SB34 | Notification/Control | Internal Holding Memory ($HB/$HW) Initialization | OK | OK |
| $SB35 | Notification/Control | Initialize Data Log | OK | OK |
| $SB36 | Notification/Control | Save Data Log | OK | OK |
| $SB37 | Notification/Control | Initialize Operation Log | OK | OK |
| $SB38 | Notification/Control | Save Operation Log | OK | OK |
| $SB39 | Control | Log Functional Object Operation | OK | OK |
| $SB40 | Control | Log Switch Screen Operation | OK | OK |
| $SB41 | Control | Log Macro Operation | OK | OK |

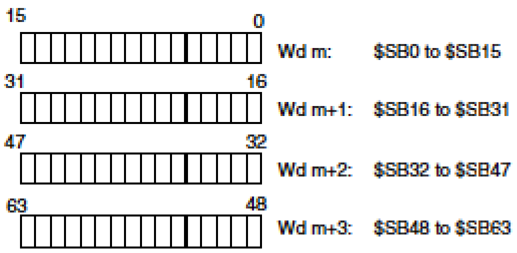
| Address | Classification | Function | NSA Series | Non-NSA Series |
|---|---|---|---|---|
| $SB42 | Notification/Control | Initialize Error Log | OK | OK |
| $SB43 | Notification/Control | Save Error Log | OK | OK |
| $SB44 | - | Reserved | NO | NO |
| $SB45 | Control | Macro Error Dialog Control | OK | OK |
| $SB46 | Notification | Macro Error Notification | OK | OK |
| $SB47 | Notification | History Processing Error Flag | OK | OK |
| $SB48 | Notification | Memory Card Free Space Check Flag | OK | OK |
| $SB49 | Notification/Control | Stop Memory Card | OK | OK |
| $SB50 | Notification | Memory Card Removing Status | OK | OK |
| $SB51 | Notification | Periodical Data Log Save in Process Flag | OK | OK |
| $SB52 | Notification | Data Block Operation Complete Flag | OK | OK |
| $SB53 | - | Reserved | NO | NO |
| $SB54 | Notification | Password Level 1 Operable Status | OK | OK |
| $SB55 | Notification | Password Level 2 Operable Status | OK | OK |
| $SB56 | Notification | Password Level 3 Operable Status | OK | OK |
| $SB57 | Notification | Password Level 4 Operable Status | OK | OK |
| $SB58 | Notification | Password Level 5 Operable Status | OK | OK |
| $SB59 to $SB62 | - | Reserved | NO | NO |
| $SB63 | Control | Exit NS-Runtime | OK | OK |

Note: The notification bits are not write-prohibited. Also, the system will not restore values, except when the status has changed.

System memory is allocated to PLC areas as shown below.

Allocated Addresses for System Memory (Under CX-Designer **PT** – **System Setting** – **Initial**)

$SB = m




Operations of system bit memory different from those of the NS Series are described below.

For other system bit memory, refer to 2-4 System Memory in the NS Series Programming Manual.

| System bit memory | Description |
|---|---|
| $SB4 (Battery Low) | $SB4 cannot be used with NS-Runtime. |
| $SB6 to $SB8 (Brightness Adjust) | $SB6 to $SB8 function only with the NSA Series. |

| System bit memory | Description |
|---|---|
| $SB9 (Backlight Control (Screen Saver Start/Cancel)) | $SB9 functions only with the NSA Series. |
| $SB10 (Control Backlight Flashing) | $SB10 functions only with the NSA Series. |
| $SB11 (Backlight Status) | $SB11 functions only with the NSA Series. |
| $SB12 to $SB14 (Buzzer) | When bits $SB12 to $SB14 turn ON, the buzzer sounds while the bit remains ON.<br>$SB12 starts a continuous buzzer (1 second intervals), $SB13 starts a short intermittent buzzer (0.5 second intervals), and $SB14 starts a long intermittent buzzer (1 second intervals, same as $SB12).<br>The buzzer may not stop at the same time the $SB12 to $SB14 turn OFF, because the buzzer does not stop in the middle of sounding.<br>For other operations, refer to 2-4 System Memory in the NS Series Programming Manual. |
| $SB15 (Notification/Control of Video) | $SB15 cannot be used with the NS-Runtime. |
| $SB16, $SB17 (Processing Priority Registration) | $SB16 and $SB17 cannot be used with the NS-Runtime. |
| $SB20 to $SB23 (Contrast Adjustment) | $SB20 to $SB23 cannot be used with the NS-Runtime. |
| $SB24 (Video Capture) | $SB24 cannot be used with the NS-Runtime. |
| $SB25 (Start Printing/ Capture Screen)<br>(See note.) | When $SB25 turns ON, $SB25 starts printing the screen displayed on the desktop, or capturing and saving it as a bitmap file in a specified folder.<br>For other operations, refer to 2-4 System Memory in the NS Series Programming Manual. |
| $SB26 (Stop Printing) | $SB26 cannot be used with the NS-Runtime. |
| $SB27 (Test Pattern Printing) | $SB27 cannot be used with the NS-Runtime. |
| $SB28 (Printer head-cleaning | $SB28 cannot be used with the NS-Runtime. |
| $SB29 (Update Printer Status) | $SB29 cannot be used with the NS-Runtime. |
| $SB30 (Printer Busy Status/Capture Busy Status) | $SB30 cannot be used with the NS-Runtime. |
| $SB31 (Notification of Printer Error/Capture Screen Error) | $SB31 cannot be used with the NS-Runtime. |
| $SB53 (Prohibit Screen Saver Startup) | $SB53 cannot be used with the NS-Runtime. |
| $SB63 (Exit NS-Runtime) | $SB63 exits the NS-Runtime.<br>When $SB63 turns ON, the NS-Runtime ends.<br>When the NS-Runtime exits, the communication address allocated to $SB63 will turn OFF automatically. |

Note: Specify a folder to save bit map files in the system setting dialog box. For details, refer to 3-2-3 History Tab Page.

## 4-1-2 System Word Memory ($SW)

System word memory ($SW) is used to exchange information between the host and NS-Runtime in word units, such as for controlling the NS-Runtime and notifying the status.

The system word memory contains 40 items with predefined functions.

The system word memory is listed in the following table.

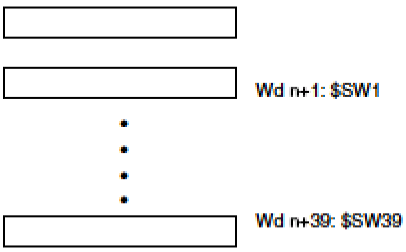
| Address | Classification | Function | NSA Series | Non-NSA Series |
|---|---|---|---|---|
| $SW0 | Notification/control | Current Screen No. | OK | OK |
| $SW1 | Notification/control | Current Pop-up Screen 1 No. | OK | OK |
| $SW2 | Notification/control | Position of Pop-up Screen 1 (X Coordinate) | OK | OK |
| $SW3 | Notification/control | Position of Pop-up Screen 1 (Y Coordinate) | OK | OK |
| $SW4 | Notification/control | Current Pop-up Screen 2 No. | OK | OK |
| $SW5 | Notification/control | Position of Pop-up Screen 2 (X Coordinate) | OK | OK |
| $SW6 | Notification/control | Position of Pop-up Screen 2 (Y Coordinate) | OK | OK |
| $SW7 | Notification/control | Current Pop-up Screen 3 No. | OK | OK |
| $SW8 | Notification/control | Position of Pop-up Screen 3 (X Coordinate) | OK | OK |
| $SW9 | Notification/control | Position of Pop-up Screen 3 (Y Coordinate) | OK | OK |
| $SW10 | Notification/control | Current Label No. | OK | OK |
| $SW11 | Control | Destination(0:Printer, 1:Memory Card) | OK | OK |
| $SW12 | - | Reserved | - | - |
| $SW13 | Control | Password Number for Canceling Input Prohibition | OK | OK |
| $SW14 | Notification | Current Time (min, s) | OK | OK |
| $SW15 | Notification | Current Date and Time (Day, Hour) | OK | OK |
| $SW16 | Notification | Current Date and Time (Year, Month) | OK | OK |
| $SW17 | Notification | Current Day (Day of the Week) | OK | OK |
| $SW18 | Notification | No. of Generated Alarms and Events | OK | OK |
| $SW19 | Notification | Generated Alarm/Event ID No. | OK | OK |
| $SW20 | Notification | Cancelled Alarm/Event ID No. | OK | OK |
| $SW21 | Notification | Alarm/Event ID of Executed Alarm/Event Object Macro | OK | OK |
| $SW22 | - | Reserved | - | - |
| $SW23 | Notification | Macro Error No. | OK | OK |
| $SW24 | Notification | Macro Error Screen No. | OK | OK |
| $SW25 | Notification | Macro Error Object ID No. | OK | OK |
| $SW26 | Notification | Error Macro Execution Timing | OK | OK |
| $SW27 | Control | Offset Value for Index I0 | OK | OK |
| $SW28 | Control | Offset Value for Index I1 | OK | OK |
| $SW29 | Control | Offset Value for Index I2 | OK | OK |
| $SW30 | Control | Offset Value for Index I3 | OK | OK |
| $SW31 | Control | Offset Value for Index I4 | OK | OK |
| $SW32 | Control | Offset Value for Index I5 | OK | OK |
| $SW33 | Control | Offset Value for Index I6 | OK | OK |
| $SW34 | Control | Offset Value for Index I7 | OK | OK |

| Address | Classification | Function | NSA Series | Non-NSA Series |
|---|---|---|---|---|
| $SW35 | Control | Offset Value for Index I8 | OK | OK |
| $SW36 | Control | Offset Value for Index I9 | OK | OK |
| $SW37 | Control | Data Log Group No. | OK | OK |
| $SW38 | Notification | Data Block Error No. | OK | OK |
| $SW39 | Notification | Authentication Level | OK | OK |

Note: The notification words are not write-prohibited. In addition, the system will not restore values, except when the status has changed.

System word memory is allocated to PLC areas as shown below. Allocated Addresses for system memory are set under **PT – System Setting – Initial** from the CX-Designer. BCD or binary data storage can be selected for each group by clicking the **System Memory List** Button in the Initial Tab Page.

$SW = n




For information on the system word memory, refer to 2-4 System Memory in the NS Series Programming Manual.

# 4-2 Document Display

Document Display is a functional object used for displaying specified document files (PDF file).

Document display object enables users to display documents including operation manuals and production instruction on the NS-Runtime.

In order to display documents, they need to be registered in document tables beforehand.

Document files can be displayed at all-time or displayed when an alarm/event occurs.

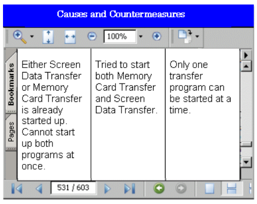
Documents to be displayed can be switched.

Displaying when an alarm/event occurs.

| Document Table | |
|---|---|
| Document No. | Document File |
| 1 | A.PDF |
| 2 | B.PDF |
| 3 | C.PDF |
| 4 | D.PDF |
| 5 | E.PDF |
| --- | --- |

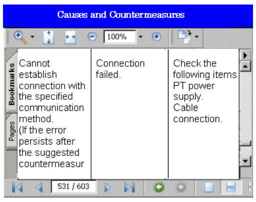
| Alarm/Event Setting | | |
|---|---|---|
| No. | Address | Document No. |
| 1 | $B100 | 1 |
| 2 | $B101 | 3 |
| 3 | $B102 | 10 |
| --- | --- | --- |

$B100 ON (Alarm 1 occurs)



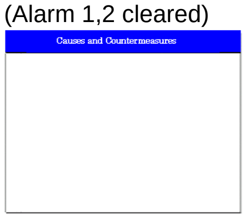

Display A.PDF (document No. 1) which is set with the alarm 1.

$B101 ON (Alarm 2 occurs)




Display C.PDF (document No. 3) which is set with the alarm 2.

$B100, $B101 OFF (Alarm 1,2 cleared)

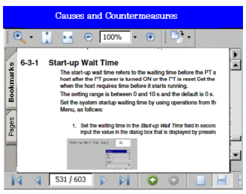



PDF file will be hidden when all alarms cleared.

Switching PDF file

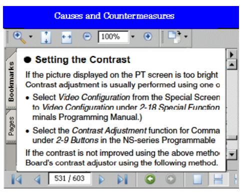
Address for Indirect reference : $W100

$W100=2




Display the B.PDF file (document No. 2).

$W100=5




Display the E.PDF file (document No. 5).

$W100=0

PDF file will be hidden when 0 is specified.

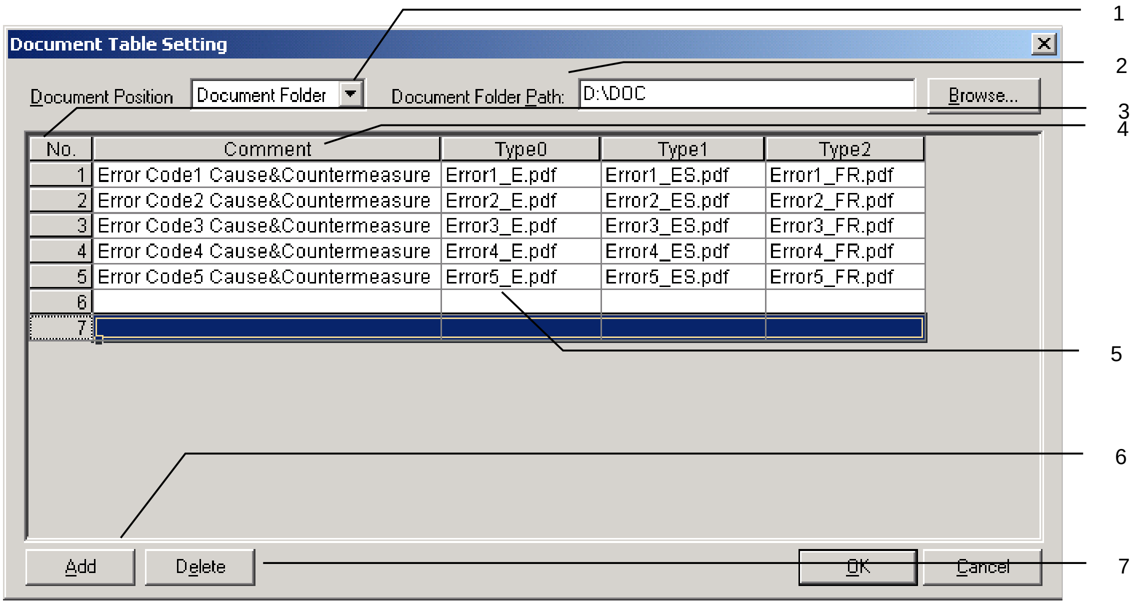
**Note**

- In order to use the document display, Adobe Reader version 7.0.x must be installed in the NS-Runtime environment.
- If more than one alarm/event occurs and if a document display is set to display a document when alarm/event occurs, a PDF file to which a higher priority has been given will be displayed.
- If numbers which are not registered are specified when setting an indirect reference for PDF file you want to display, no document will be displayed.

## 4-2-1 Document Table Setting

This function is used for registering PDF files displayed on a document display object.

1. Select **PT** Menu – **Document Table Setting** with CX-Designer.
2. Document Table Setting Dialog Box will be displayed.



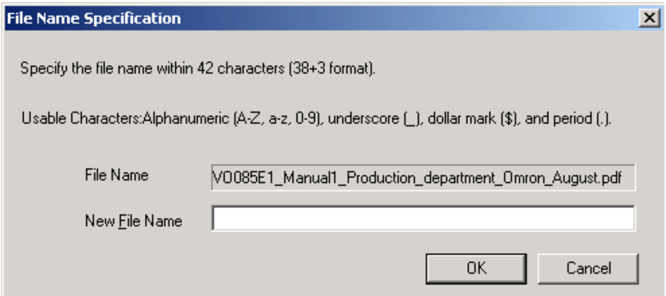

| No | Item | Details |
|---|---|---|
| 1 | Document Position | Select a location to store document files you want to display.<br>-Project Folder<br>-Document Folder<br>When selecting the Document Folder, select any folder from the Document Folder Path to save document files. |
| 2 | Document Folder Path | When selecting the document folder from the document position, specify any folder to store document files.<br>Specify a full path to folder that exists in the NS-Runtime environment.<br>Folder can be specified from the Browse For Folder Dialog Box displayed by clicking the Browse Button. |

| No | Item | Details |
|---|---|---|
| 3 | No. | Document number will be displayed. |
| 4 | Comment | Enter comments of up to 32 characters. |
| 5 | Document File | Set a document file for each label.<br>Enter a file name directly or select a file from a file selector that is displayed by clicking Button.<br>When selecting the project folder from the document position and selecting a document file from the file selector, the document files will be automatically copied to the project folder.<br>When selecting the document folder from the document position or when directly entering a file name, users need to manually copy the file to the specified folder. |
| 6 | Add | Adds document numbers.<br>Up to 5000 numbers can be added.<br>Among the unused numbers, the smallest number will be added. |
| 7 | Delete | Deletes selected document numbers. |

**Note**

- ◆ When setting more than 42 characters for the PDF file name, the following dialog box will be displayed. Rename the file name (Maximum of 42 characters).

  In the same way, if the specified file name contains an unusable character, a dialog box asking you to rename will be displayed.

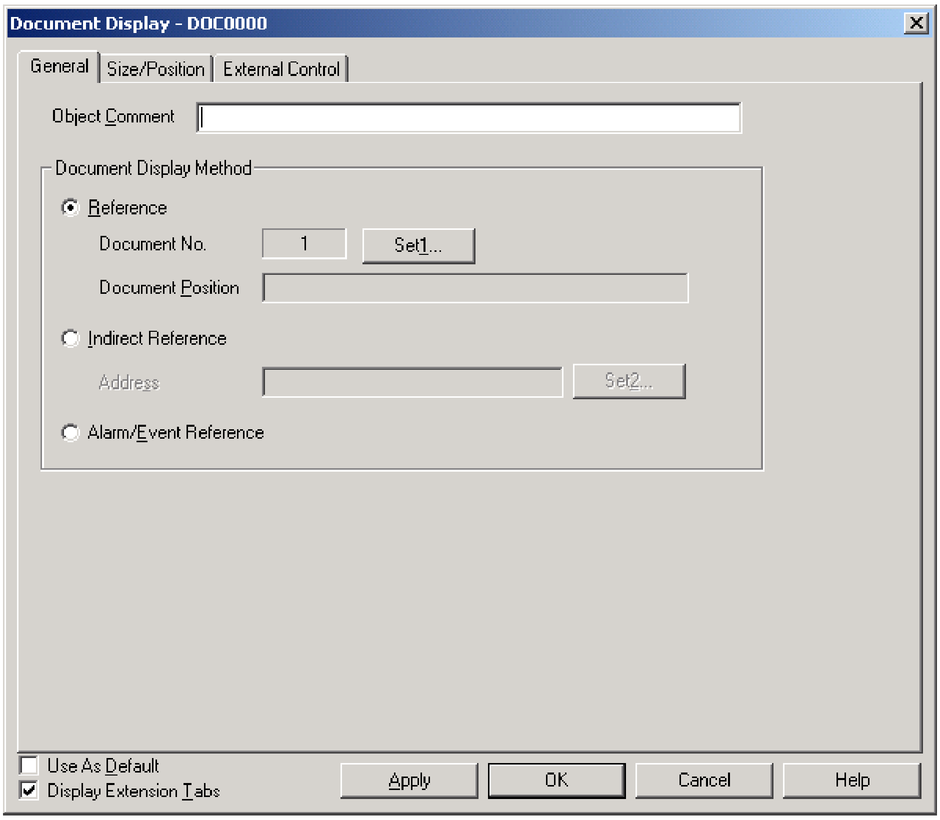



## 4-2-2 Document Display

To create a document display, select the **Functional Objects** Menu – **Document Display**, or select icon.

- Setting Items of Functional Object Properties.

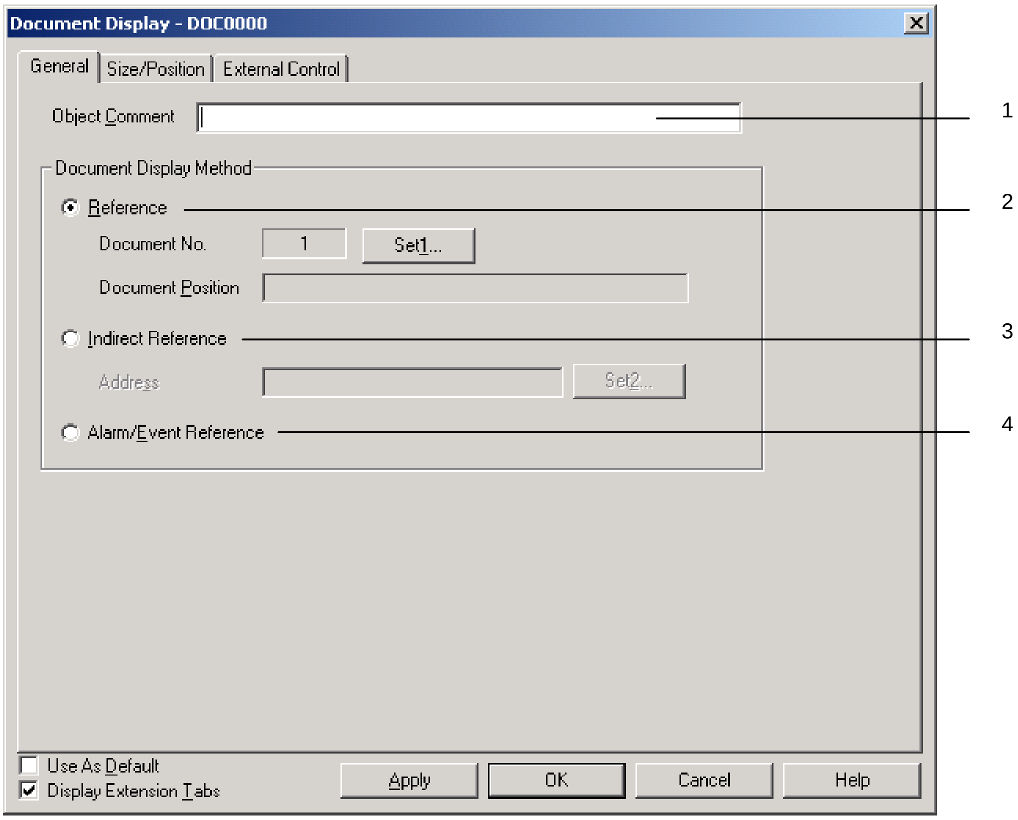
This section describes setting items displayed in the document display's functional object properties dialog box.




General: Set the method of displaying documents and storage location of document files.
Size/Position: Set the object's size and position.
External Control: Set the communication address that controls the refresh of PDF files.

General Tab Page

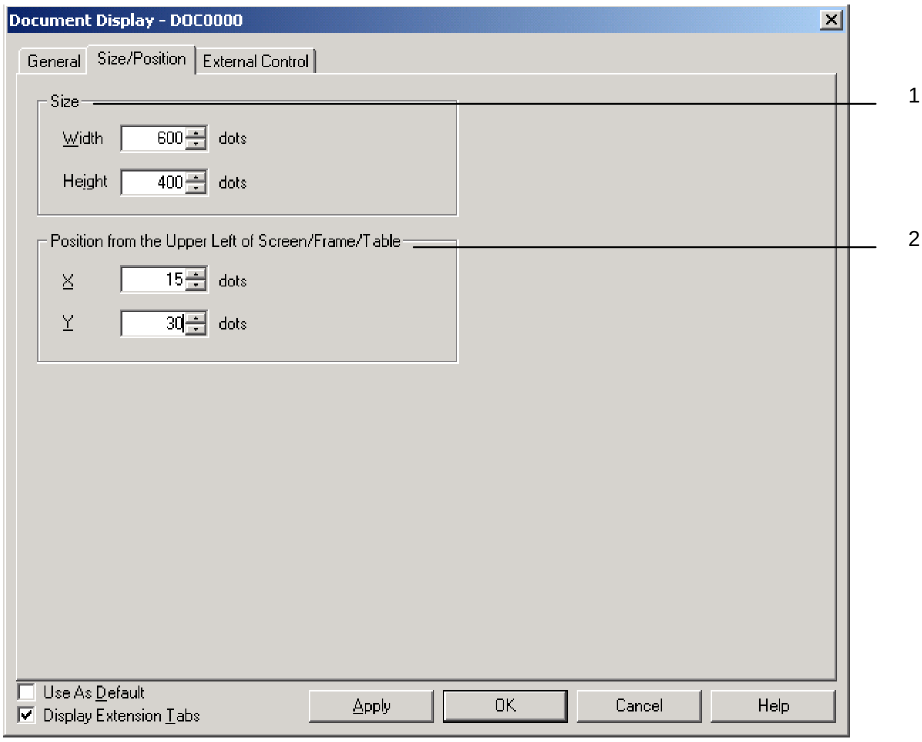
Set the document display method and Document storage location




| No. | Item | Details |
|---|---|---|
| 1 | Object Comment | Set the comment for the description of pasted objects.<br>(Up to 32 characters. One-byte and two-byte characters are counted as one character.) |
| 2 | Reference | Displays a document file whose number is set with the Document No.<br>Click the Set Button to display a Document Table Setting Dialog Box. Select a document you want to display. |
| 3 | Indirect Reference | Displays document files using specified communication address as a document number. Save the document number in binary format in the address.<br>When specifying a document number that is not registered in the document table, the document will not be shown. |
| 4 | Alarm/Event Reference | Displays documents whose numbers have been set in the Alarm Event Details Dialog Box when an alarm/event occurs.<br>If the alarm/event is cleared, the document file will be hidden. |

Size/Position Tab Page (Extension Tab)

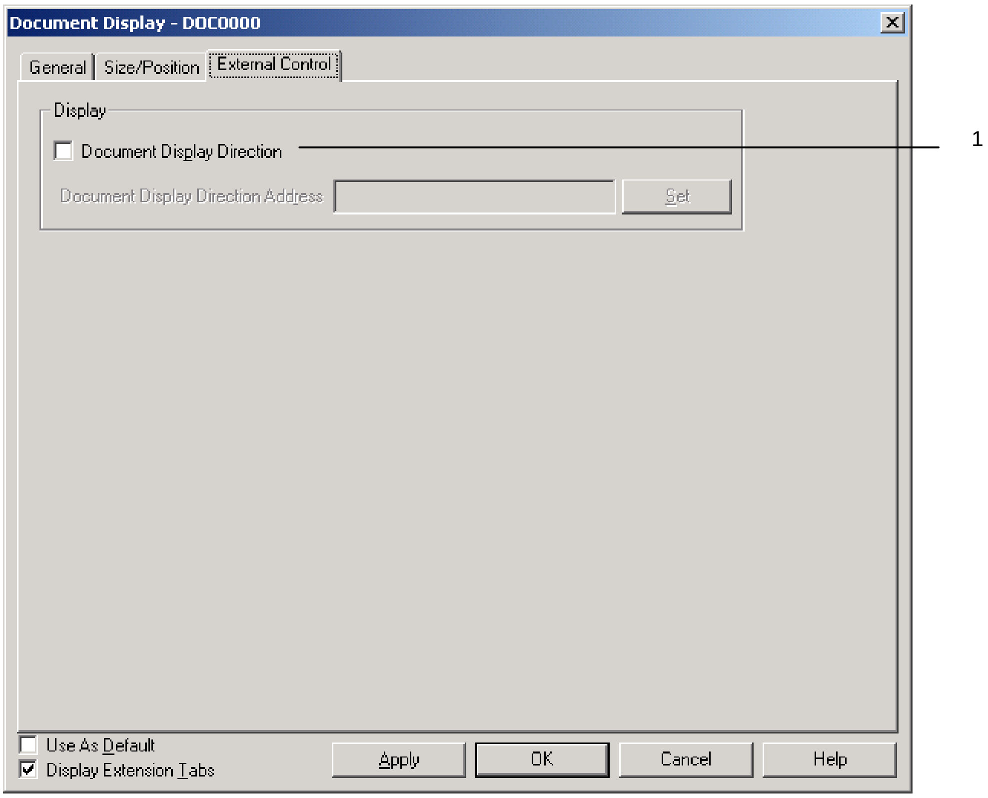
Set and display the size and position of the object.




| No. | Item | Details |
|---|---|---|
| 1 | Size | Set the size for the functional object.<br>Width: 1 to 2,560 dots<br>Height: 1 to 1,920 dots |
| 2 | Position from the Upper Left of Screen/Frame/Table | Specify X and Y coordinates by the position from the upper left of Screen/frame/table.<br>X coordinate: -3,839 to 3,839 dots<br>Y coordinate: -2,399 to 2,399 dotes |

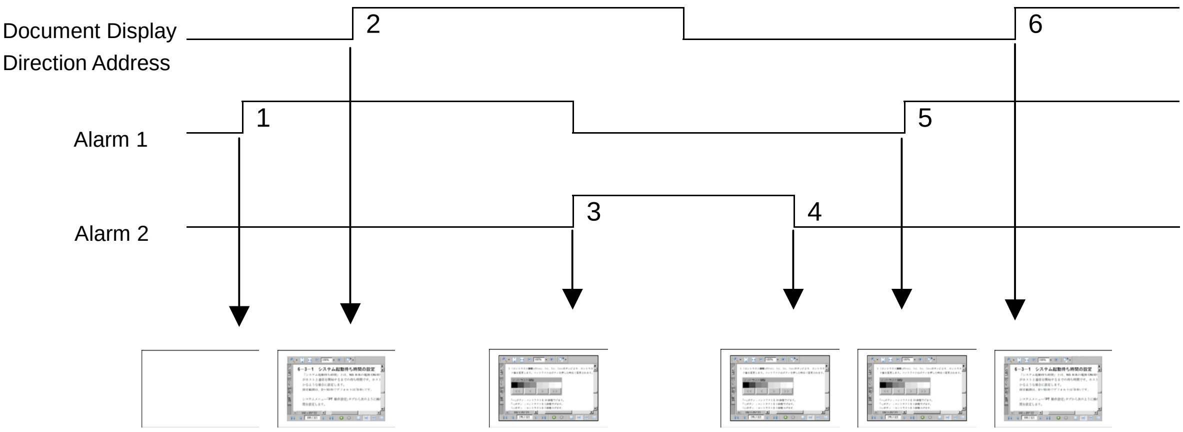
External Control Tab Page (Extension Tab)

Set the communication address that controls the refresh of PDF file.




| No. | Item | Description |
|---|---|---|
| 1 | Document Display Direction | Select this option to display and refresh the PDF files while the set communication address is ON.<br>Deselect this option to switch the PDF files in the way specified in the Document Display Method field in the General Tab Page. |

The document display will display and refresh the PDF files in the following way by turning ON/OFF the Document Display Direction Address. (These operations are performed when a document is displayed when an alarm/event occurs. The operation will be the same when setting the indirect reference.)



1. PDF file will not be displayed even if an alarm 1 occurs, because the Document Display Direction Address is OFF.
2. PDF file specified with the alarm 1 will be displayed, because the Document Display Direction Address turns ON.
3. PDF file specified with the alarm 2 will be displayed, because the Document Display Direction Address is ON.
4. PDF file will not be refreshed even if an alarm 2 cleared, because the Document Display Direction Address is OFF. (PDF file will not be hidden.)
5. PDF file will not be refreshed even if an alarm 1 occurs, because the Document Display Direction Address is OFF. (PDF file that is set for the alarm 1 will not be displayed.)
6. PDF file specified with the alarm 1 will be displayed, because the Document Display Direction Address turns ON.

**Note**

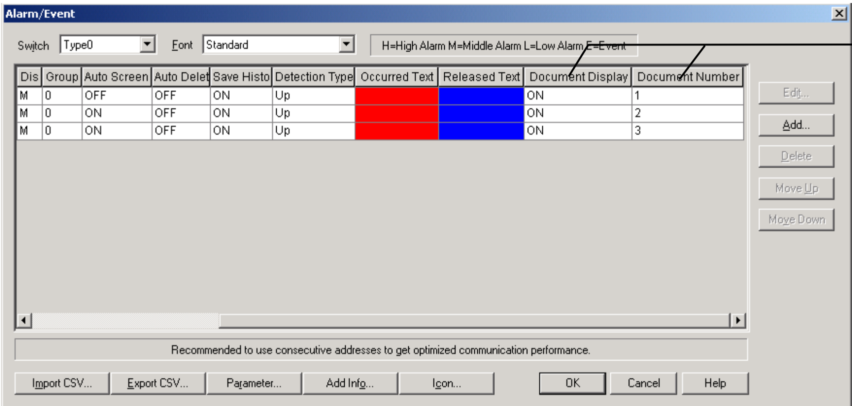
◆ Even if the Document Display Direction Address turns OFF, the PDF file will not be hidden.

# 4-3 Alarm/Event Setting

When alarm/event occurs, PDF files specified with Document Display can be displayed with the NS-Runtime. In response to this new function, setting items to specify a desired PDF file are added to the Alarm/Event Details.

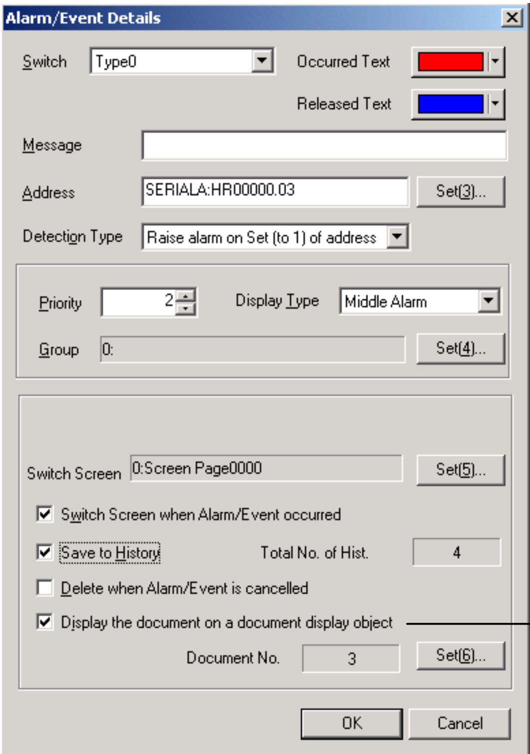
This section describes added items only. For the other items, refer to 2-13 Alarm/Event in the NS Series Programming Manual.

1. Select the Alarm/Event Setting under the PT Menu with the CX-Designer.
2. Alarm Event Dialog Box will be displayed. Click the **Add** or **Edit** Button.




Displays whether or not a document is set to display and document numbers.

3. Alarm/Event Details Dialog Box will be displayed.




1

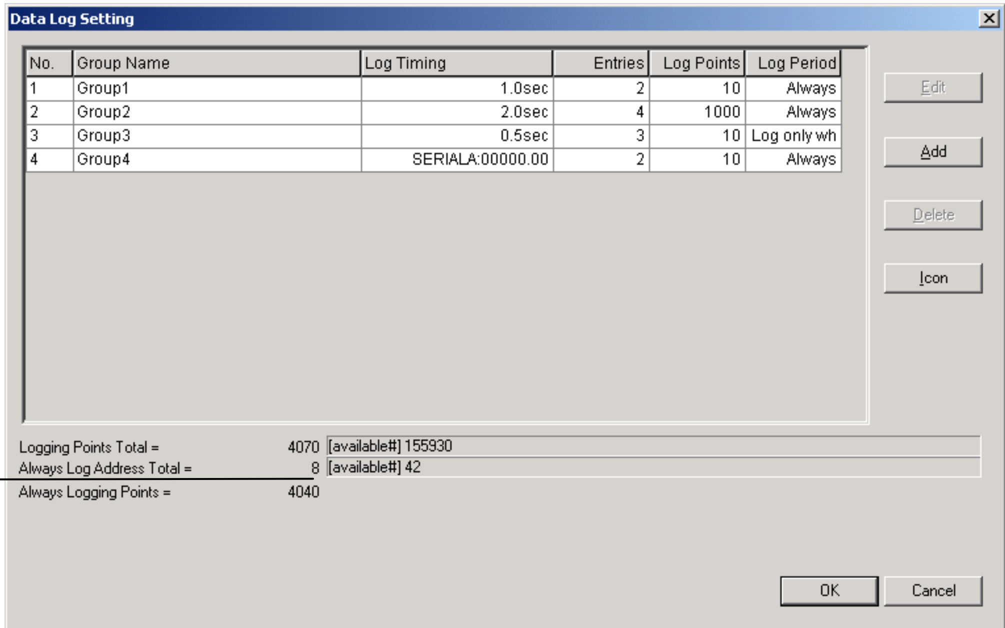
| No. | Item | Description |
|---|---|---|
| 1 | Display the document on a document display object | Select this check box to display PDF file on a document display object when an alarm/event occurs.<br>Click the Set Button to display the Document Table Setting Dialog Box. Then select a document to display. |

# 4-4 Data Logs

With the NS-Runtime, maximum number of always logging points has been extended to 160,000 points.

This section describes only the extended items. For the other items, refer to 2-14 Data Logs in the NS Series Programming Manual.

1. Select **PT** Menu – **Data Log Setting** with the CX-Designer.
2. Data Log Setting Dialog Box will be displayed. Resister data log groups by clicking the Add or Edit Button.




1

| No. | Item | Details |
|---|---|---|
| 1 | Always Logging Points | Always logging is possible for up to 160,000 with the NS-Runtime.<br>The sum of the products of the number of logging points total and the number of points of 'Log only when Data Log object is shown' cannot exceed 160,000 points. |

**Note**

- The number of "Always logging points" is the sum of the products of the number of points registered and the number of logging points for each group for which the log period is set to "always."

  (Number registered x Number of log points)+(Number registered x Number of log points)+…
  +(Number registered x Number of log points)

  For the above example, calculations would be as follows:
  {2×10(Group1 )}+{4×1000(Group 2)}+{4×10(Group 4)} = 4060

# 4-5 Macros

## 4-5-1 Functions

In addition to macro of NS Series, the following functions are provided for macro of the NS-Runtime.

| Action | | Function |
|---|---|---|
| Manipulating character strings | String Comparison (Case sensitive) | STRCMP/STRCMPW |
| | String Comparison (Not case sensitive) | STRICMP/STRICMPW |
| | String Concatenation | STRCAT/STRCATW |
| | Gets String Length | STRLEN/STRLENW |
| | Extracts the specified number of characters from the leftmost characters of a string. | STRLEFT/STRLEFTW |
| | Extracts the specified number of characters from a specified character position of a string. | STRMID/STRMIDW |
| | Extracts the specified number of characters from the rightmost characters of a string. | STRRIGHT/STRRIGHTW |
| | Deletes the leftmost spaces of a string | STRLTRIM/STRLTRIMW |
| | Deletes the spaces at both sides of a string | STRTRIM/STRTRIMW |
| | Deletes the rightmost spaces of a string | STRRTRIM/STRRTRIMW |
| | Converts a string to lower case | STRLWR/STRLWRW |
| | Converts a string to upper case | STRUPR/STRUPRW |
| Manipulating Window | Finds a window title | WINFIND |
| | Maximizes a specified window | WINMAX |
| | Minimizes a specified window | WINMIN |
| | Restores a size of a specified window | WINNORMAL |
| | Brings a specified window to the front | WINTOP |
| | Exits a specified window | WINTERM |
| Module startup | Starts up an application | EXEC |

The timing when a function can be executed as shown below.

| | Project Macro | | | | | Screen Macro | | Functional object Macro | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | When Loading a Project | Alarm/Event On Timing | Alarm/Event Off Timing | When changing a bit | When changing a value | When Loading a screen | When Unloading a screen | Touch On Timing | Touch Off Timing | When changing a value | Before Inputting Numeral/String | When writing Numeral/String | List Selection | When pressing a Display Area | When Selecting an Alarm/Event |
| STRCMP(W) | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| STRICMP(W) | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| STRCAT(W) | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| STRLEN(W) | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| STRLEFT(W) | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| STRMID(W) | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| STRRIGHT(W) | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| STRLTRIM(W) | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| STRTRIM(W) | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| STRRTRIM(W) | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| STRLWR(W) | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| STRUPR(W) | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| WINFIND | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| WINMAX | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| WINMIN | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| WINNORMAL | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| WINTOP | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| WINTERM | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| EXEC | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK |

**Table of Function and Argument**

The variety of variables and values, which can be specified as an argument for macro function is described below. Characters such as S,D,n,x,y in the Argument column indicate parameters used in the formats given in *4-5-2 Details of the Functions*.

| Function | Argument | PT Memory | | | | Constant | String | Host Side Address | Specify Index |
|---|---|---|---|---|---|---|---|---|---|
| | | $B $HB $SB | Numerical access of bit | $W $HW $SW | Long access of word | | | | |
| STRCMP(W) | S1 | | | OK | | | OK | | OK |
| | S2 | | | OK | | | OK | | OK |
| STRICMP(W) | S1 | | | OK | | | OK | | OK |
| | S2 | | | OK | | | OK | | OK |
| STRCAT(W) | D | | | OK | | | | | OK |
| | S | | | OK | | | OK | | OK |
| STRLEN(W) | S | | | OK | | | OK | | OK |
| STRLEFT(W) | D | | | OK | | | | | OK |
| | S | | | OK | | | OK | | OK |
| | n | | OK | OK | OK | OK | | | OK |
| STRMID(W) | D | | | OK | | | | | OK |
| | S | | | OK | | | OK | | OK |
| | n1 | | OK | OK | OK | OK | | | OK |
| | n2 | | OK | OK | OK | OK | | | OK |
| STRRIGHT(W) | D | | | OK | | | | | OK |
| | S | | | OK | | | | | OK |
| | n | | OK | OK | OK | OK | | | OK |
| STRLTRIM(W) | D | | | OK | | | | | OK |
| | S | | | OK | | | OK | | OK |
| STRTRIM(W) | D | | | OK | | | | | OK |
| | S | | | OK | | | OK | | OK |
| STRRTRIM(W) | D | | | OK | | | | | OK |
| | S | | | OK | | | OK | | OK |
| STRLWR(W) | D | | | OK | | | | | OK |
| | S | | | OK | | | OK | | OK |
| STRUPR(W) | D | | | OK | | | | | OK |
| | S | | | OK | | | OK | | OK |
| WINFIND | S1 | | | OK | | | OK | | OK |
| | S2 | | OK | OK | OK | OK | | | OK |
| WINMAX | S1 | | | OK | | | OK | | OK |
| | S2 | | OK | OK | OK | OK | | | OK |
| WINMIN | S1 | | | OK | | | OK | | OK |
| | S2 | | OK | OK | OK | OK | | | OK |
| WINNORMAL | S1 | | | OK | | | OK | | OK |
| | S2 | | OK | OK | OK | OK | | | OK |
| WINTERM | S1 | | | OK | | | OK | | OK |
| | S2 | | OK | OK | OK | OK | | | OK |
| WINTOP | S1 | | | OK | | OK | | | OK |
| | S2 | | | OK | OK | | | | OK |
| EXEC | S1 | | | OK | | | OK | | OK |
| | S2 | | | OK | | | OK | | OK |
| | S3 | | OK | OK | OK | OK | | | OK |

## 4-5-2 Details of the Functions

This section describes details of standard functions used in macro programming.

| **EXEC** | **Application Startup** |
|---|---|
| Applicable versions | System Version 6.6 or higher |
| Format | EXEC(S1,S2,S3) |
| Function | Executes the command specified with S1 and displays at S2 window title and in S3 window style.<br>S1: Specify a startup file and a startup argument with S1.<br>(Separate a startup file and a startup argument with a space)<br>Note: Set Unicode when using variables to specify text strings for S1 and S2. Up to 255 characters can be specified for S1 or S2. A path containing blank space cannot be specified for the argument when staring S1.<br>S2: Window title after a startup (“ ” displays the default title at startup)<br>Note: If the application being started specifies a window title. the window title specified for S2 will be ignored.<br>S3: Windows size at startup (0=normal, 1=Minimize, 2=Maximize, 3=Hide)<br>Note: Use Unicode if you use symbols to specify strings with S1 and S2. If the application to be started specifies a window title, the window title specified with S2 will be disabled. |
| Return Value | 0: Completed normally<br>-1:Startup failed |
| Example | EXEC("CMD.EXE","ABC", 2);<br>'Execute CMD.EXE and maximize a window titled ABC. |

| **STRCAT(W)** | **String Concatenation** |
|---|---|
| Applicable versions | System Version 6.6 or higher |
| Format | STRCAT(D, S) --- ASCII code<br>STRCATW(D, S) --- Unicode |
| Function | Connects the string S to the string D. |
| Return Value | None |
| Example | STRCPY($W0, "ABC"); 'Set ABC to $W0 to $W1.<br>STRCPY($W10, "DEF"); 'Set DEF to $W10 to $W11.<br>STRCAT($W0, $W10); 'Set ABCDEF to $W0 to $W3. |

| **STRCMP(W), STRICMP(W)** | **String Comparison** |
|---|---|
| Applicable versions | System Version 6.6 or higher |
| Format | STRCMP(S1,S2) STRICMP(S1,S2) •••ASCII code<br>STRCMPW(S1,S2) STRICMPW(S1,S2) •••Unicode |
| Function | Compares the string.<br>STRCMP(W) Case sensitive<br>STRICMP(W) Not case sensitive |
| Return Value | 0: Agree<br>-1: Disagree. Character code S1 is smaller than character code S2.<br>1: Disagree. Character code S1 is greater than character code S2. |
| Example | STRCPY($W0, "ABC"); 'Set ABC to $W0 to $W1.<br>$W10= STRCMP($W0, "DEF"); 'Compare ABC and DEF. Character code A, 0 x 41 < Character code D, 0 x 44. Thus the return value , -1, is stored in $W0. |

| **STRLEFT(W)** | **Extracts the specified number of characters from leftmost characters of a string** |
|---|---|
| Applicable versions | System Version 6.6 or higher |
| Format | STRLEFT(D,S,n), --- ASCII code<br>STRLEFTW(D,S,n) --- Unicode |
| Function | Stores n characters from the left of the string S to D. |
| Return Value | None |
| Example | STRLEFT($W0,"ABCDEFG",3);<br>'Extract 3 characters (ABC) from the leftmost string and store ABC in $W0 and $W1. |

| **STRLEN(W)** | **Gets string length** |
|---|---|
| Applicable versions | System Version 6.6 or higher |
| Format | STRLEN(S) --- ASCII code<br>STRLENW(S) --- Unicode |
| Function | Returns the length of the string S (The number of bytes of S). |
| Return Value | String Length (The number of bytes of S). |
| Example | STRCPY($W0, "ABC");<br>$W10 = STRLEN($W0);<br>‘Set 3 to '$W10 |

| **STRLTRIM(W)** | **Deletes the leftmost spaces of a string** |
|---|---|
| Applicable versions | System Version 6.6 or higher |
| Format | STRLTRIM(D,S) --- ASCII code<br>STRLTRIMW(D,S) --- Unicode |
| Function | Deletes the leftmost space of the string S to enter it to D. |
| Return Value | None |
| Example | STRLTRIM($W0, " ABC");<br>’Store ABC in $W0 to $W1. |

| **STRLWR(W)** | **Converts a string to lower case** |
|---|---|
| Applicable versions | System Version 6.6 or higher |
| Format | STRLWR(D, S) --- ASCII code<br>STRLWRW(D, S) --- Unicode |
| Function | Converts upper cases of the string S to lower cases and enter them to D. |
| Return Value | None |
| Example | STRCPY($W0, "ABC");<br>STRLWR($W10, $W0); 'Set abc to $W10 to $W11 |

| **STRMID(W)** | **Extracts the specified number of characters from a specified character position of a string** |
|---|---|
| Applicable versions | System Version 6.6 or higher |
| Format | STRMID(D,S,n1,n2) --- ASCII code<br>STRMIDW(D,S,n1,n2) --- Unicode |
| Function | Extracts n2 characters from n1 of a string specified with S. Then store them in D. (n1: Specify it counting the head of a string as 1.) |
| Return Value | None |
| Example | STRMID($W0,"ABCDEFG",2,3);<br>'Extracts 3 characters (BCD) from the 2nd of the string. Then store BCD in $W0 to $W1. |

| **STRRIGHT(W)** | **Extracts the specified number of characters from rightmost characters of a string** |
|---|---|
| Applicable versions | System Version 6.6 or higher |
| Format | STRRIGHT(D,S,n) --- ASCII code<br>STRRIGHTW(D,S,n) --- Unicode |
| Function | Extracts n characters from the rightmost characters of the string S. Then sets them in D. |
| Return Value | None |
| Example | STRRIGHT ($W0,"ABCDEFG",3);<br>'Extract 3 characters (EFG) from the rightmost characters of the string.<br>Set EFG to $W0 to $W1. |

| **STRRTRIM(W)** | **Deletes the rightmost spaces of a string** |
|---|---|
| Applicable versions | System Version 6.6 or higher |
| Format | STRRTRIM(D,S) --- ASCII code<br>STRRTRIMW(D,S)--- Unicode |
| Function | Deletes the rightmost spaces of the string S to enter them to D. |
| Return Value | None |
| Example | STRRTRIM($W0, "ABC ");<br>'Set ABC to $W0 to $W1. |

| **STRTRIM(W)** | **Deletes the spaces at both sides of a string** |
|---|---|
| Applicable versions | System Version 6.6 or higher |
| Format | STRTRIM(D,S) --- ASCII code<br>STRTRIMW(D,S) --- Unicode |
| Function | Extracts spaces at both sides of a string specified with S. Then stores them to D. |
| Return Value | None |
| Example | STRTRIM($W0, " ABC ");<br>'Set ABC in $W0 to $W1 excluding spaces at both ends. |

| **STRUPR(W)** | **Converts a string to upper case** |
|---|---|
| Applicable versions | System Version 6.6 or higher |
| Format | STRUPR(D, S) --- ASCII code<br>STRUPRW(D, S) --- Unicode |
| Function | Converts a string S from lower case to upper case. Then set it to D. |
| Return Value | None |
| Example | STRCPY($W0, "abc");<br>STRUPR($W10, $W0); ‘Set ABC to $W10 to $W11. |

| **WINFIND** | **Finds a window title** |
|---|---|
| Applicable versions | System Version 6.6 or higher |
| Format | WINFIND(S1,S2) |
| Function | Searches whether a window specified with S1 has started or not.<br>Set the following search conditions for each bit with S2.<br>The 0 bit to 3rd bit:<br>0:Window title that completely matches with S1.<br>1:Window title that matches with the number of characters of S1.<br>2:Window title that matches with the number of characters of S1 (Except for a folder).<br>The 4th bit:<br>0:The search ends when a target is found.<br>1:Searches for all the matched windows.<br>Use Unicode if you use a symbol to specify a string with S1. |
| Return Value | The number of find results (0: None, 1 or more: Found, -1: Parameter error) |
| Example | WINFIND("TEST",0); 'Search whether there is a window titled TEST. |

## *Note*

- With the argument S1, specify a string that will be displayed on the title bar of a window you want to search for.
  Example:
  To find a window below, set as follows.
  WINFIND("CX=Designer – DEMO – [0000:Screen1]",0);




- If the '1:Window title that matches the number of characters of S1' is specified with the argument S2, the window title that matches the number of the characters specified with S1 will be searched for. In this case the first string displayed on the title bar will be searched for.
  In above case, set WINFIND("CX-Designer",1);
  This window will be searched for when the macro is executed.
  Note:
  WINFIND("DEMO",1);
  By making the above setting, the window title will not searched for. Because the DEMO is not in the first string, although the title bar includes this string.
- The above information also applies to WINMAX, WINMIN, WINNORMAL, WINTERM, and WINTOP.

| **WINMAX** | **Maximizes a specified window** |
|---|---|
| Applicable versions | System Version 6.6 or higher |
| Format | WINMAX(S1, S2) |
| Function | Maximizes a window specified with S1.<br>Set the following search conditions for each bit with S2.<br>The 0 bit to 3rd bit:<br>0:Window title that completely matches with S1.<br>1:Window title that matches with the number of characters of S1.<br>2:Window title that matches with the number of characters of S1 (Except for a folder).<br>Use Unicode if you use a symbol to specify a string with S1. |
| Return Value | 0 :Completed normally<br>-1:No specified window |
| Example | WINMAX("TEST",0) ; 'Maximize a window titled TEST. |

| **WINMIN** | **Minimizes a specified window** |
|---|---|
| Applicable versions | System Version 6.6 or higher |
| Format | WINMIN(S1, S2) |
| Function | Minimizes a window specified with S1.<br>Set the following search conditions for each bit with S2.<br>The 0 bit to 3rd bit:<br>0:Window title that completely matches with S1.<br>1:Window title that matches with the number of characters of S1.<br>2:Window title that matches with the number of characters of S1 (Except for a folder).<br>Use Unicode if you use a symbol to specify a string with S1. |
| Return Value | 0 :Completed normally<br>-1:No specified window |
| Example | WINMIN("TEST",0) ; ‘Minimize a window titled TEST. |

| **WINNORMAL** | **Restores a size of a specified window** |
|---|---|
| Applicable versions | System Version 6.6 or higher |
| Format | WINNORMAL(S1, S2) |
| Function | Restores a size of a window specified with S1.<br>Set the following search conditions for each bit with S2.<br>The 0 bit to 3rd bit:<br>0:Window title that completely matches with S1.<br>1:Window title that matches with the number of characters of S1.<br>2:Window title that matches with the number of characters of S1 (Except for a folder).<br>Use Unicode if you use a symbol to specify a string with S1. |
| Return Value | 0 :Completed normally<br>-1:No specified window |
| Example | WINNORMAL("TEST",0) ;<br>‘Restore a size of a window titled TEST. |

| **WINTERM** | **Exits a specified window** |
|---|---|
| Applicable versions | System Version 6.6 or higher |
| Format | WINTERM(S1, S2) |
| Function | Exits a window specified with S1.<br>Set the following search conditions for each bit with S2.<br>The 0 bit to 3rd bit:<br>0:Window title that completely matches with S1.<br>1:Window title that matches with the number of characters of S1.<br>2:Window title that matches with the number of characters of S1 (Except for a folder).<br>The 4th bit:<br>0:Sends a WM_CLOSE message to a specified window.<br>1: Sends a WM_DESTORY message to a specified window.<br>Example: Microsoft Word<br>When the 4th bit is 0,<br>Displays a message saying Do you want to save the document 1?<br>After confirming, Microsoft-Word ends.<br>When the forth bit is 1,<br>Exits a window without displaying a confirmation message even when there is a change.<br>Use Unicode if you use a symbol to specify a string with S1. |
| Return Value | 0:Completed normally<br>-1:No specified window |
| Example | WINTERM("TEST",0); ‘Exit a window titled TEST. |

| **WINTOP** | **Brings a specified window to the front** |
|---|---|
| Applicable versions | System Version 6.6 or higher |
| Format | WINTOP(S1 ,S2) |
| Function | Brings a window specified with S1 to the front.<br>Set the following search conditions for each bit with S2.<br>The 0 bit to 3rd bit:<br>0:Window title that completely matches with S1.<br>1:Window title that matches with the number of characters of S1.<br>2:Window title that matches with the number of characters of S1 (Except for a folder).<br>Use Unicode if you use a symbol to specify a string with S1. |
| Return Value | 0: Completed normally<br>-1:No specified window |
| Example | WINTOP("TEST",0) ;<br>‘Bring a window titled TEST to the front. |

# Section 5

# NS-Runtime System Menu Operations

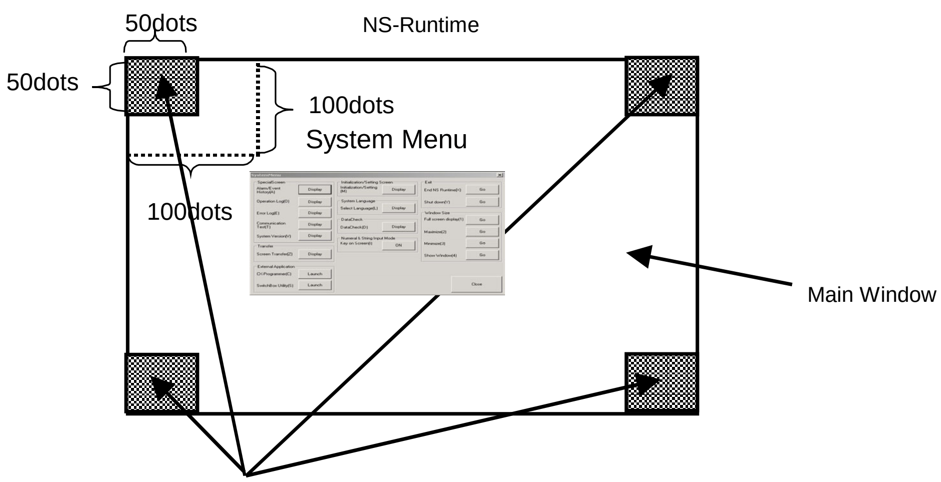
This section describes the basic methods for operating the System Menu of the NS-Runtime and details on functions.

# 5-1 Displaying and Exiting the System Menu

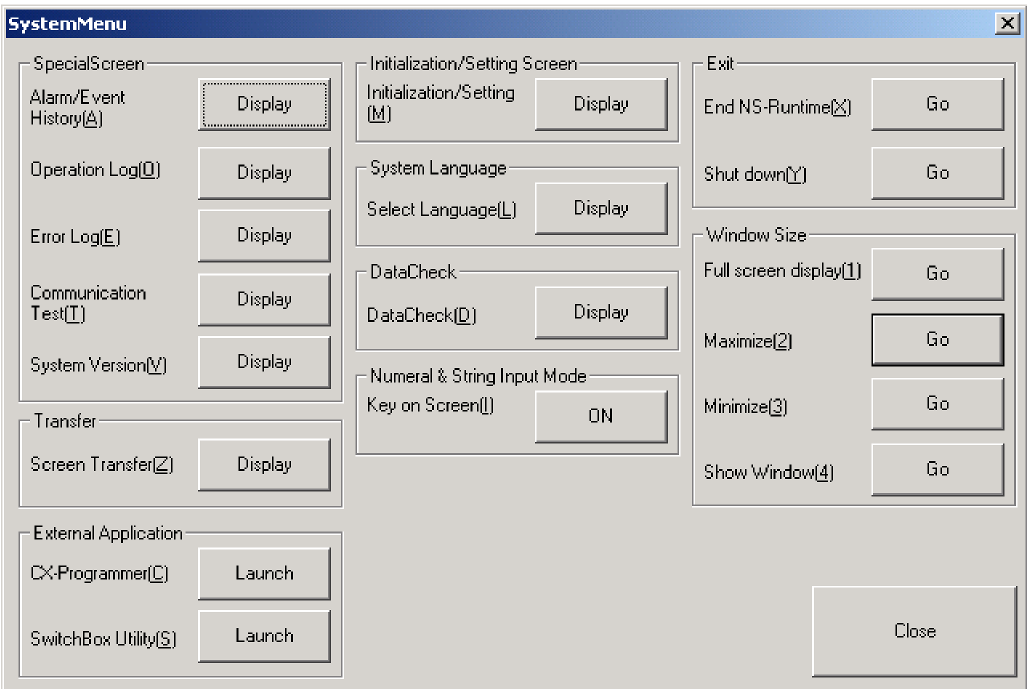
This section describes methods for displaying and exiting the system menu.

## 5-1-1 Displaying the System Menu

The System Menu can be displayed by double-clicking one of the four corners (Range of 50 dots x 50 dots) of the main window. It will be displayed at 100 dots x 100 dots from the top left of the main window. For the second time or more, the system menu will be displayed at the position where it was previously displayed. While $SB3 is ON, the system menu will not be displayed.




The system menu will be displayed by clicking twice any of the four corners.



**Note**

- Displaying a screen of Communication Test, Initialization/Setting or Data Check (described later) from the system menu will stop communications with a host. However, the data log and the alarm monitoring will not be stopped.

  When the system menu and screens other than above are displayed, communications will continue.

- To display the system menu when a pop-up screen is being displayed, double-click any of the four corners of the pop-up screen.

## 5-1-2 Exiting the System Menu

Use one of the following procedures to exit the system menu.

1. Click the **Close** Button in the System Menu.
2. Click the  Button in the System Menu.
3. Click the F4 and the Alt key at the same time.

# 5-2 System Menu Configuration

This section describes items and functions displayed in the system menu.

The following items and functions are displayed in the system menu.

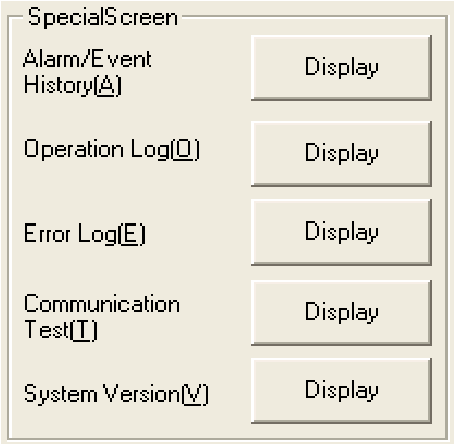
| Group Name | Menu Name | Function | Section |
|---|---|---|---|
| Special Screen | Alarm/Even History | Displays the alarm history. | 5-3-1 |
| | Operation Log | Displays the operation log. | 5-3-2 |
| | Error Log | Displays the error log. | 5-3-3 |
| | Communication Test | Checks whether communications with a specified destination are possible or not, by sending and receiving FINS messages. | 5-3-4 |
| | System Version | Displays the version display screen. | 5-3-5 |
| Transfer | Screen Transfer | Displays the screen data transfer window. | 5-4 |
| External Application | CX-Programmer | Starts up CX-Programmer. | 5-5-1 |
| | SwitchBox Utility | Starts up SwitchBox Utility. | 5-5-2 |
| Initialization/Setting Screen | Initialization/Setting | Initializes data and makes settings for the PT, project, password and communications. | 5-6 |
| System Language | Select Language | Switches the system language. | 5-7 |
| Data Check | Data Check | Checks screen contents by displaying the registered screen without communicating. | 5-8 |
| Numeral & String Input Mode | Key on Screen | Selects the keypad or hardware keyboard to input numerals and strings to functional objects. | 5-9 |
| Exit | End NS-Runtime | Ends NS-Runtime. | 5-10-1 |
| | Shut Down | Ends NS-Runtime and shuts down Windows. | 5-10-2 |
| Window Size | Full screen display | Displays the NS-Runtime main window in a full screen. | 5-11-1 |
| | Maximize | Maximizes the NS-Runtime main window. | 5-11-2 |
| | Minimize | Minimizes the NS-Runtime main window. | 5-11-3 |
| | Show Window | Displays the NS-Runtime main window in the specified size. | 5-11-4 |

**Note**

- From the system menu of NS-Runtime it is possible to start up the CX-Programmer and the SwitchBox Utility whose functions are equivalent to those of NS series Device Monitor, Ladder Monitor, Programming Console and PLC data trace.

# 5-3 Special Screen

This function is used to display the data history, communications test, and version information.




| Item | Function |
|---|---|
| Alarm/Event History | Displays the alarm history. |
| Operation Log | Displays the operation log. |
| Error Log | Displays the error log. |
| Communication Test | Checks whether communications with a specified destination are possible or not, by sending and receiving FINS messages. |
| System Version | Displays the version display screen. |

Details on how to use the functions are explained here.

## 5-3-1 Alarm History

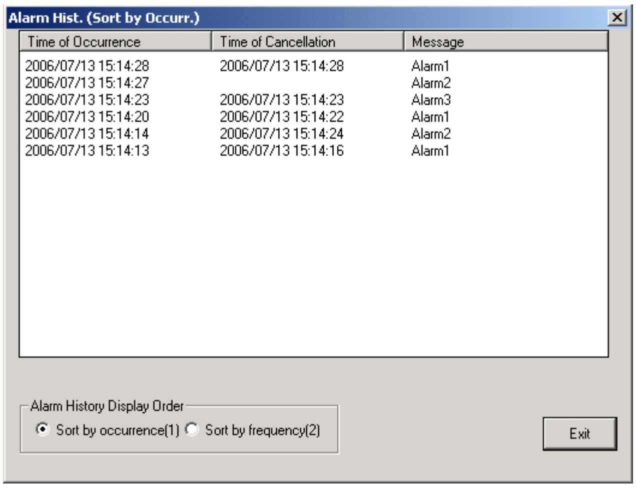
This function is used to display the alarm history. The alarm history can be displayed in order of occurrence or frequency. Up to 1,024 alarms can be displayed.

Display alarm history data by using operations from the System Menu as follows.

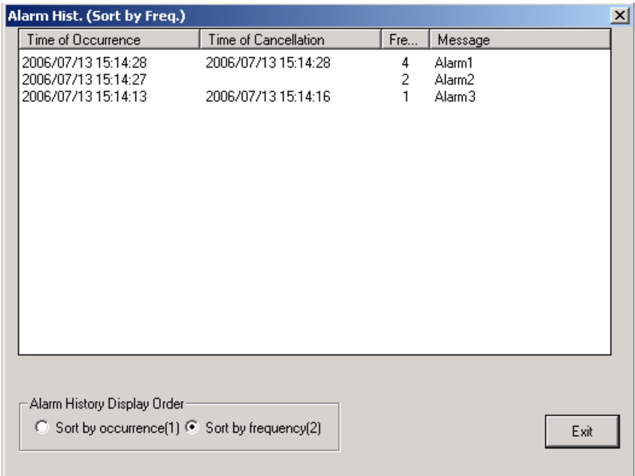
1. Click the **Display** Button next to the Alarm/Event History to display the Alarm History (Sort by Occurr.) /(Sort by Freq.) Dialog Box. Alarm history data will be displayed in the order that was previously selected.

2. Select the **Sort by Occurrence** or **Sort by Frequency** in the Alarm History Display Order Field to change the display order.

**Sort by occurrence**




**Sort by frequency**




3. Click the **Exit** Button to close the dialog box.

> ***Note***
>
> - Event history will not be displayed.
> - For details on the alarm history function, refer to 2-18-2 Alarm/Event History in the NS Series Programming Manual.

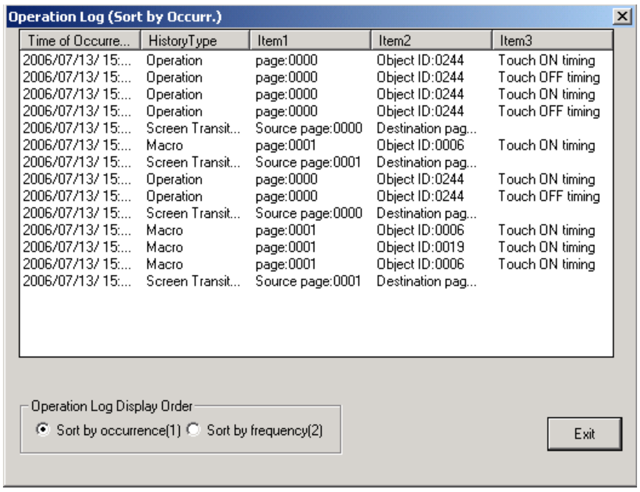
## 5-3-2 Operation Log

This function is used to display the operation log. The operation history can be displayed in order of occurrence or frequency. Up to 1,024 operations can be displayed.

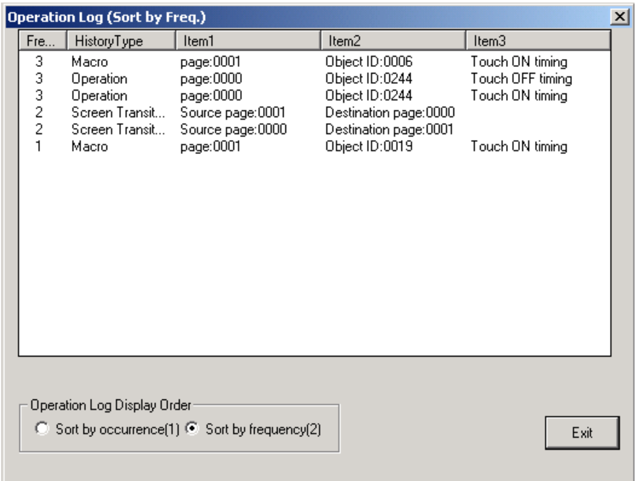
Display operation log data by using operations from the System Menu as follows.

1. Click the **Display** Button next to the Operation Log to display the Operation Log (Sort by Occurr.) /(Sort by Freq.) Dialog Box. The operation log data will be displayed in the order that was previously selected.
2. Select the **Sort by Occurrence** or **Sort by Frequency** in the Operation Log Display Order Field to change the display order.

**Sort by occurrence**




**Sort by frequency**




3. Click the **Exit** Button to close the dialog box.

> ***Reference***
>
> ◆ For details on the operation log function, refer to 2-18-1 Operation Log Function in the NS series Programming Manual.

## 5-3-3 Error Log

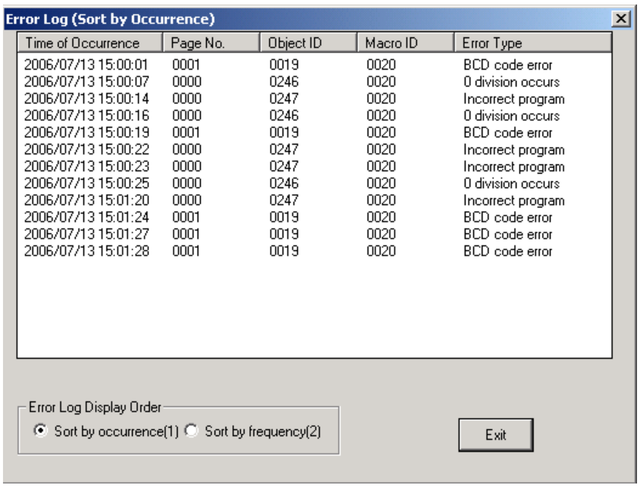
This function is used to display the macro error history. The macro error history can be displayed in order of occurrence or frequency.

Up to 1,024 errors can be displayed.

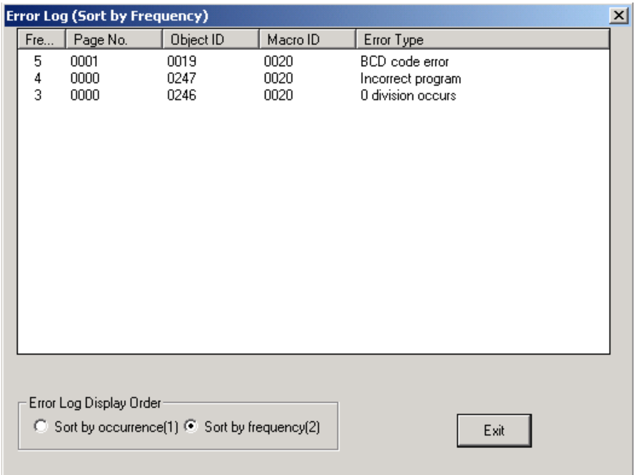
Display error log data by using operations from the System Menu as follows.

1. Click the **Display** Button next to the Error Log to display the Error Log (Sort by Occurrence) /(Sort by Frequency) Dialog Box. The error log data will be displayed in the order that was previously selected.
2. Select the **Sort by Occurrence** or **Sort by Frequency** in the Error Log Display Order Field to change the display order.

### Sort by occurrence




### Sort by frequency




3. Click the **Exit** Button to close the dialog box.

***Reference***

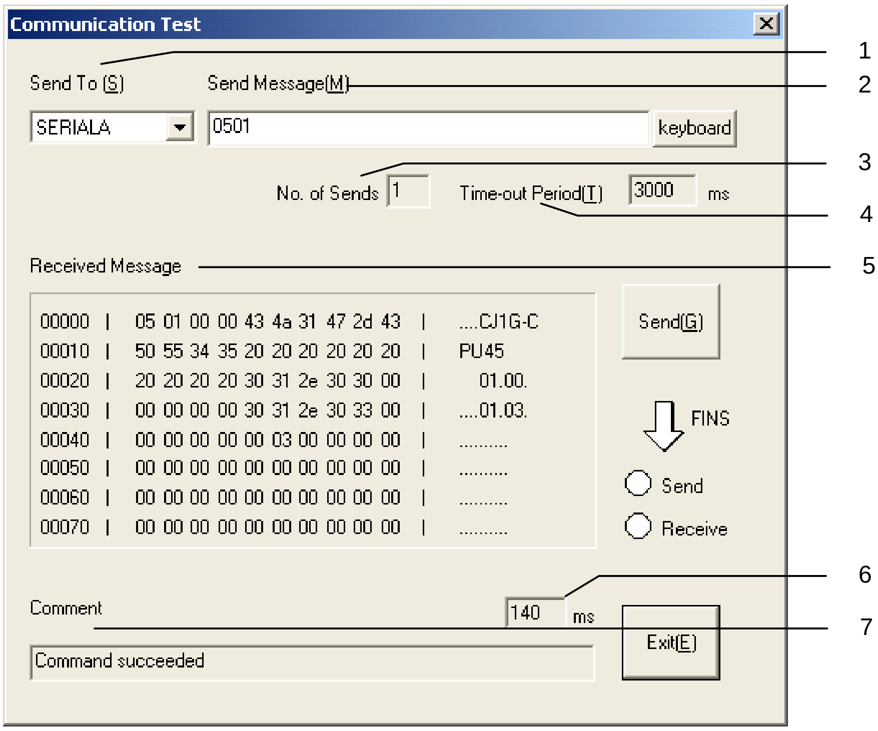
◆ For details on the error log function, refer to 2-18-4 Error Log Function in the NS series Programming Manual.

## 5-3-4 Communication Test

This function is used to check whether communications with a specified destination are possible or not, by sending and receiving FINS messages.

Display the Communication Test Screen by using operations in the System Menu as follows.

1. Click the **Display** Button next to the Communication Test to display the Communication Test Screen.




2. Set each of the setting items as follows:

| No | Item | Function |
|---|---|---|
| 1 | Send To | Selects the host of the transmission destination from the list of hosts that are registered in the project. |
| 2 | Send Message | Sets the FINS command being to be sent. |
| 3 | No. of Sends | Displays the number of times messages are transmitted. The number of times is fixed to 1. |
| 4 | Time-out Period | Displays the timeout time for when the communication method is set to the Ethernet or Controller Link. (Fixed to 3,000ms)<br>An error message will be displays when the timeout time is exceeded after transmitting the FINS commend.<br>For serial communications, the timeout time set with the Initialization/Setting in the System Menu is used. |

3. Click the **Send** Button to start transmission.
   The sending indicator will remain lit until the transmission is completed.
   After transmission, the Receive indicator will remain lit until reception is completed.
4. If communications are performed normally, a response will be received from the transmission destination and the following items will be displayed. For details on FINS commands and information displayed in comments, refer to the FINS Commands Reference Manual (W227).

| No | Item | Function |
|---|---|---|
| 5 | Received Message | Displays the data of received results of the FINS command. |
| 6 | ms | Displays the time lapsed in ms from sending the FINS command until receiving the FINS response. |
| 7 | Comment | Displays the status according to the completion code after reception. |

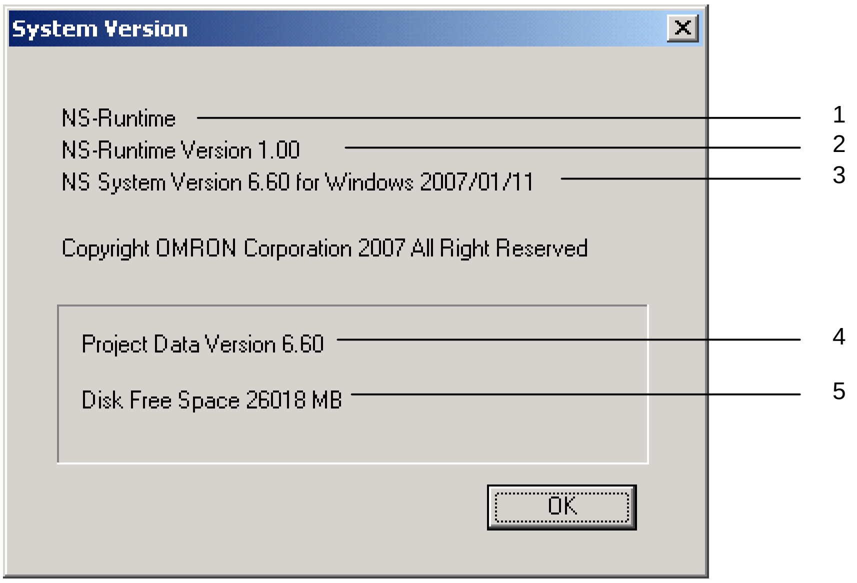
5. Click the **Exit** Button to close the communication test screen.

## 5-3-5 Version Display

This function is used to display information on the NS-Runtime version.

Display the Version Display Screen by using operations in the System Menu as follows.

1. Click the **Display** Button next to the System Version Button. The version display screen will be displayed.




2. The following items will be displayed.

| No | Item | Function |
|---|---|---|
| 1 | Model | Displays the product model. |
| 2 | Version | Displays the NS-Runtime version. |
| 3 | System Version | Displays the system version that the NS-Runtime supports. |
| 4 | Data Version | Displays project data version.<br>No version will be displayed when the NS-Runtime does not support the model of transferred project data. |
| 5 | Disk Free Space | Displays the free space of the drive in which NS-Runtime is installed. |

3. Click the **OK** Button to close the System Version Screen.

# 5-4 Transferring Data

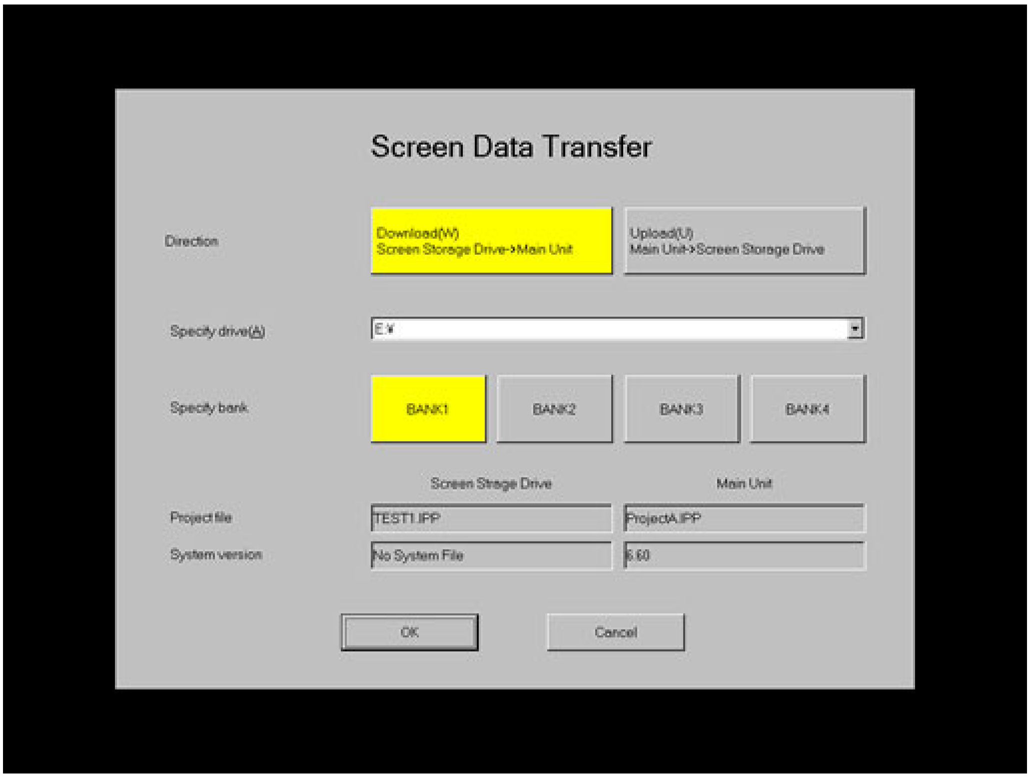
This function is used to display the project transfer screen.

This section describes the startup method only. For details on transferring project data, refer to 6 Transferring Project Data.

1. Click the **Display** Button next to the Screen Transfer.



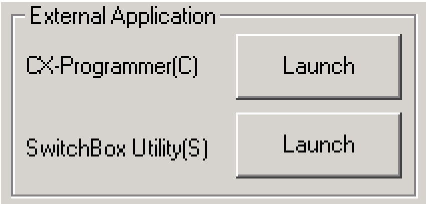

2. Screen Data Transfer Window will be displayed.



# 5-5 External Application

This function is used to start up the CX-Programmer and the SwitchBox Utility.

This section describes methods for starting up external applications. For details on the functions and operations of external applications, refer to the manuals for each application.




| Item | Function |
|---|---|
| CX-Programmer | Starts up the CX-Programmer. |
| SwitchBox Utility | Starts up the SwitchBox Utility. |

## 5-5-1 CX-Programmer

1. Click the **Launch** Button next to the CX-Programmer.
   If the CX-Programmer has not installed, the following dialog box below will be displayed. Install the CX-Programmer.




## 5-5-2 SwitchBox Utility

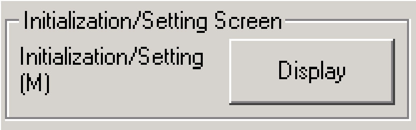
1. Click the **Launch** Button next to the SwitchBox Utility to launch the SwitchBox Utility.
   If the SwitchBox Utility has not installed, the following dialog box below will be displayed. Install the SwitchBox Utility.

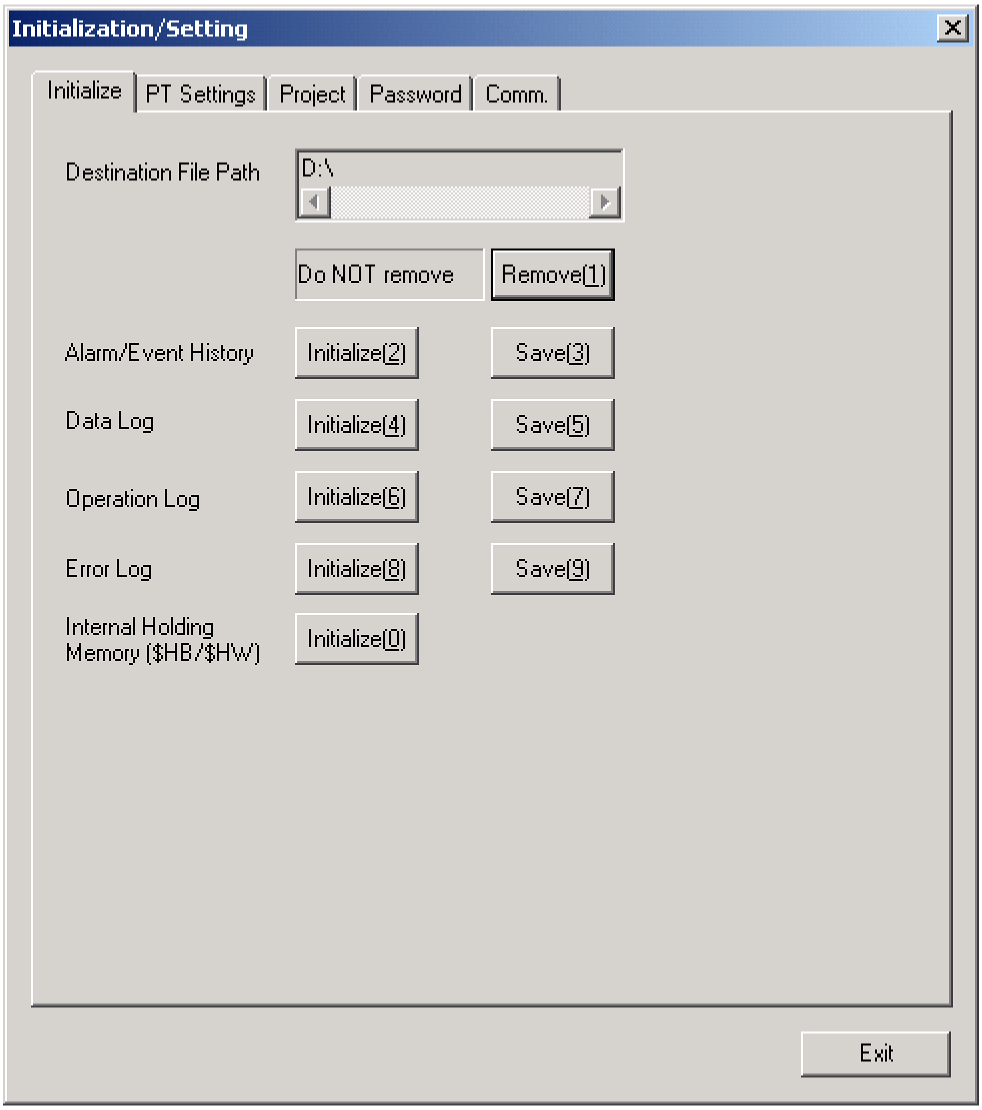


# 5-6 Initialization/Setting Screen

This function is used to initialize the data and make settings of PT operations, project, password and communications.

Click the **Display** Button next to the Initialization/Setting in the System Menu to display Initialization/Setting Screen.



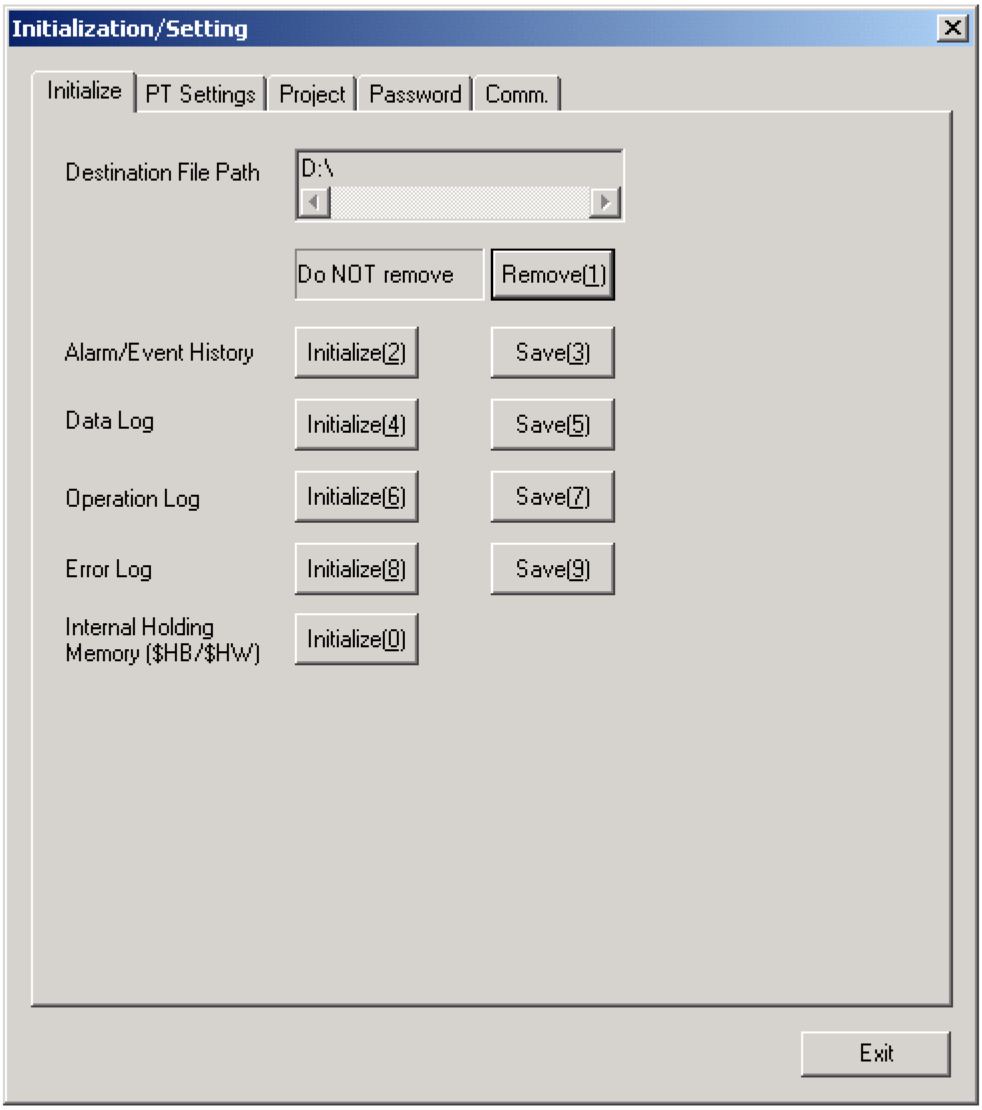



The following items will be displayed in the Initialization/Setting Screen

| Tab Name | Item | Function |
|---|---|---|
| Initialize | Remove | Removes the drive specified as the save destination of history data. |
| | Alarm/Event History Initialize/Save | Initializes and saves alarm/event history data. |
| | Data Log Initialize/Save | Initializes and saves the data log. |
| | Operation Log Initialize/Save | Initializes and saves the operation log. |
| | Error Log Initialize/Save | Initializes and saves the error log. |
| | Internal Holding Memory ($HB/$HW) Initialize | Initializes and saves the Internal Holding Memory ($HB/$HW). |
| PT Settings | Screen Saver | Sets whether to use the screen saver. |
| | Key Press Sound | Sets whether an input sound is heard when the touch switches are clicked. |
| | Buzzer Sound | Sets whether to sound a buzzer when a command from the host is received or an error occurs. |
| | Backlight | Sets the backlight brightness when using the NSA Series.<br>(Settings cannot be made when the NS-Runtime is used in an environment other than the NSA Series.) |
| | Calendar Check | Sets and displays the date and the time of the system clock. |
| Project | Project Title | Displays the project title. |
| | No. of Labels | Displays the number of labels set for the project. |
| | Initial Screen | Sets and displays the screen numbers first displayed after the NS-Runtime is started. |
| | Initial label | Sets and displays the label number shown on the screen after the NS-Runtime is started. |
| | Alarm/Event Rec. Method | Displays the method for recording the alarm/event histories. |
| | Data Log Rec. Method | Displays the method for recording the data log. |
| | Oper. Log Rec. Method | Displays the method for recording the operation log. |
| | Error Log Rec. Method | Displays the method for recording the error log. |
| | System Memory | Displays the allocated hosts and addresses of the system memory ($SB/$SW). |
| Password | Password | Changes a password. |
| Comm. | Comm. Auto-return | Selects whether automatic recovery is used when a communications error occurs. |
| | Time-out Interval | Sets and displays the timeout monitor time. |
| | Retry Counts | Sets and displays the number of communications retries. |
| | Serial A | Sets and displays whether serial port A is used, the communications method and other details. |
| | Serial B | Sets and displays whether serial port B is used, the communications method, and other details. |
| | Ethernet | Sets and displays whether Ethernet is used and communications details. |
| | Controller Link | Sets and displays whether Controller Link is used and communications details. |

## 5-6-1 Initializing Data

The Initialize Tab Page is used to remove the destination drive of save history data. It is also used to initialize or save the alarm/event histories saved during NS-Runtime execution.




The following items will be displayed in the Initialize Tab Page.

| No | Item | Function |
|---|---|---|
| 1 | Remove | Enables to remove the drive registered with a project as the save destination of history data. |
| 2 | Alarm/Event History Initialize/Save | Initializes and saves the alarm/event history data. |
| 3 | Data Log Initialize/Save | Initializes and saves the data log. |
| 4 | Operation Log Initialize/Save | Initializes and saves the operation log. |
| 5 | Error Log Initialize/Save | Initializes and saves the error log. |
| 6 | Internal holding memory $HB/$HW Initialize | Initializes and saves the Internal Holding Memory ($HB/$HW). |

## Removing the Destination Drive

This function is used to stop the device so that the drive, which was specified as the destination to save history data, can be safely removed (Perform the same process as that of Windows' safely remove hardware)

Stop the device by using operations in the Initialize Tab Page as follows.

1. Click the **Remove** Button in the Destination File Path field.




2. The following dialog box will be displayed when it is safe to remove the drive.




3. Confirm that it is safe to remove the drive, and remove the removable drive.




4. If a removable drive is not being used as a destination, the following dialog box will be displayed.




**Note**

- In order to use the removable drive again after the Ready to Remove is shown, insert the removable drive into the NS-Runtime environment again. Once the Ready to Remove is shown, the NS-Runtime cannot access a removable drive until the removable drive is inserted again.
- When turning ON $SB49 in system memory from the host and when it is safe to remove a memory card, $SB50 will be turned ON. While the $SB50 is ON, a memory card inserted into the NS-Runtime environment can be removed. For details, refer to 2-4 System Memory in NS series Programming Manual.

## Initializing and Saving the Alarm/Event History

This function is used to initialize or save the alarm/event histories saved in the NS-Runtime.

Use this function when screen data has been changed, to initialize history data, or to save history data on a removable drive as a CSV file.

While the NS-Runtime is running, the alarm/event histories continually check the status of bits registered as alarms/events and record the date, time, and number of times the bits turned ON/OFF.

Up to 1,024 alarms can be recorded.

**Note**

- The alarm/event histories can also be initialized by turning ON $SB32 in system memory from the host.
- The alarm/event histories can be deleted when project data is downloaded.
- The alarm/event histories can also be saved by turning ON $SB33 in system memory from the host. For details, refer to 2-4 System Memory in the NS Series Programming Manual.

Initialize or save alarm/event histories by using operations from the Initialize Tab Page as follows.

### Initializing Alarm/Event Histories

1. Click the **Initialize** Button next to the Alarm/Event History.
   A confirmation message will be displayed. Click the **Yes** Button to initialize the data. Click the **No** Button to cancel the initialize function.




2. When the alarm/event history initialization has been completed, the following dialog box will be displayed.



**Saving Alarm/Event Histories**

Saving the latest history data on a specified drive in CSV file with the following name.

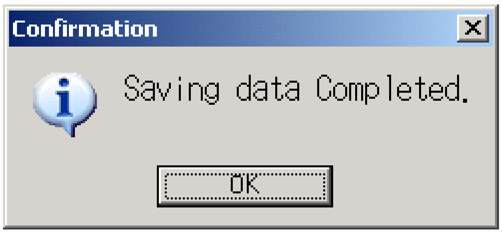
Alarm history data: Alarm.csv

Event history data: Event.csv

1. Click the **Save** Button for the Alarm/Event History. Then the following dialog box will be displayed. Click the **Yes** Button to start saving. Click the **No** Button to cancel the save function.




2. When the alarm/event history saving has been completed, the following dialog box will be displayed.




3. If the alarm/event history saving has failed, the following dialog box will be displayed.




## Initializing and Saving the Data Log

This function is used to initialize or save the data log saved in the NS-Runtime.

Use this function when screen data has been changed, for initializing history data or for saving history data on a removable drive as a CSV file.

The data log is used to record changes over time to the contents of an address that is registered in the log.

Up to 50,000 events can be recorded.

***Note***

- The data log for the specified group can be initialized by setting the group number in $SW37 and turning ON $SB35 in the system memory from the host. The data logs for all groups can be initialized by setting $SW37 to 0.
- The data log can be deleted when project data is downloaded.
- The data log for the specified group can be saved by setting the group number in $SW37 and turning ON $SB36 in the system memory from the host. The data logs for all groups can be saved by setting $SW37 to 0. For details, refer to 2-4 System Memory in the NS Series Programming Manual.

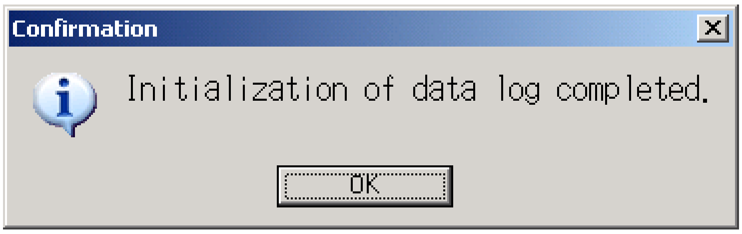
Initialize or save the data log by using operations from the Initialize Tab Page as follows.

### Initializing the Data Log

1. Click the **Initialize** Button next to the Data Log.
   A confirmation message will be displayed. Click the **Yes** Button to initialize the data. Click the **No** Button to cancel the initialize function.




2. When the data log initialization has been completed, the following dialog box will be displayed.




### Saving the Data Log

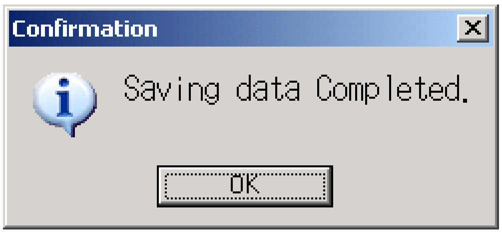
Saving the latest history data on a specified drive in CSV file with the following name.

Data log data: Trend.csv

1. Click the **Save** Button for the data log. A confirmation message will be displayed. Click the **Yes** Button to save the data. Click the **No** Button to cancel the save function.




2. When the data log saving has been completed, the following dialog box will be displayed.



3. If the data log save has failed, the following dialog box will be displayed.




## Initializing and Saving the Operation Log

This function is used to initialize or save the operation log saved in the NS-Runtime.

Up to 1,024 operations can be recorded in order of occurrence.

Use this function when screen data has been changed, for initializing log data, or for saving log data as a CSV file in a removable drive.

The operation log is used to record the number of times the following operations are performed and the order in which they occur.

-Functional object operation history

-Screen display history

-Macro execution history

For details, refer to 2-18-1 Operation Log Function in the NS Series PT Programming Manual

***Note***

- ◆ The functional objects that can be recorded are ON/OFF buttons, word buttons, Numeral Display & Input, String Display & Input, thumbwheel switches and data block tables.
- ◆ The operation log data can also be initialized by setting the system bit memory address $SB37 to ON from the host.
- ◆ The operation log can be deleted when project data is downloaded.
- ◆ The operation log can also be saved by turning ON $SB38 in system memory from the host. Refer to *2-4* System Memory in the NS Series Programming Manual for details.

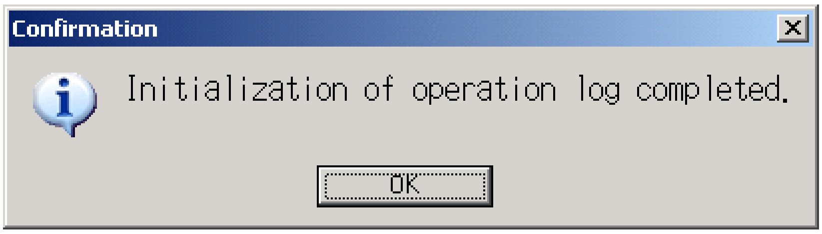
Initialize or save the operation log by using operations from the Initialize Tab Page as follows.

**Initializing the Operation Log**

1. Click the **Initialize** Button next to the Operation Log. A confirmation message will be displayed. Click the **Yes** Button to initialize the data. Click the **No** Button to cancel the initialize function.




2. When the operation log initialization has been completed, the following dialog box will be displayed.

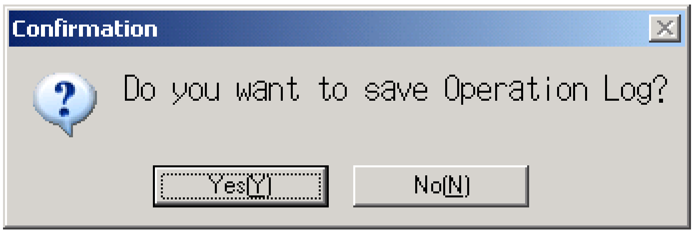


**Saving the Operation Log**

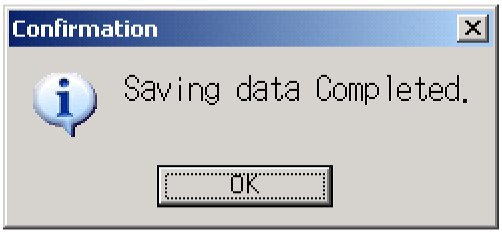
Saving the latest history data on a specified drive in CSV file with the following name.

Operation log data: Operat.csv

1. Click the **Save** Button for the operation log. A confirmation message will be displayed. Click the **Yes** Button to save the data. Click the **No** Button to cancel the save function.




2. When operation log saving has been completed, the following dialog box will be displayed.




3. If the operation log saving has failed, the following dialog box will be displayed.




***Reference***

- ◆ When saving the operation log, the operation log must be controlled from the system memory. For details on controlling the operation log, refer to 2-4 System Memory in the NS Series Programming Manual.

## Initializing and Saving Error Log

This function is used to initialize the macro error history saved in the NS-Runtime or save the history in a removable drive.

Up to 100 errors can be recorded in the error log. The number of errors that can be recorded, however, also depends on the free space in the memory.

The error log records the errors that occur when the macro function is executed. Initialize or save the error log by using operations from the Initialize Tab Page as follows.

### Initializing the Error Log

1. Click the **Initialize** Button next to the Error Log. A confirmation message will be displayed. Click the **Yes** Button to initialize the data. Click the **No** Button to cancel the initialize function.




2. When the error log initialization has been completed, the following dialog box will be displayed.




### Saving the Error Log

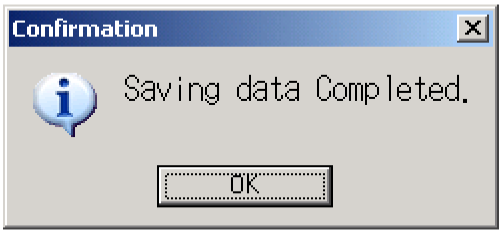
Saving the latest log data on a specified drive in CSV file with the following name.

Error log data: MacroErr.csv

1. Click the **Save** Button for the Error Log. A confirmation message will be displayed. Click the **Yes** Button to save the data. Click the **No** Button to cancel the save function.




2. When the error log saving has been completed, the following dialog box will be displayed.




3. If the error log saving has failed, the following dialog box will be displayed.



**Note**

- The error log can be deleted when project data is downloaded.
- The error log can also be initialized and saved by turning ON the following bits in the system memory from the host.

  $SB42 Initializes Error Log

  $SB43 Saves Error Log

  Refer to 2-4 System Memory in the NS Series Programming Manual for details.

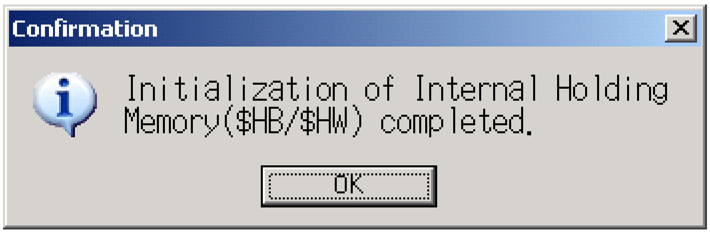
## Initializing Internal Holding Memories ($HB/$HW)

The following procedure is used to initialize the Internal Holding Memories in the NS-Runtime ($HB0 to $HB8191 and $HW0 to $HW8191). Use the following procedure from the Initialize Tab Page to initialize the Internal Holding Memories ($HB/$HW).

1. Click the **Initialize** Button for the Internal Holding Memories ($HB/$HW). The following confirmation message will be displayed. Click the **Yes** Button to initialize. Click the **No** Button to cancel the initialize function.




2. When the Internal Holding Memory ($HB/$HW) initialization has been completed, the following dialog box will be displayed.

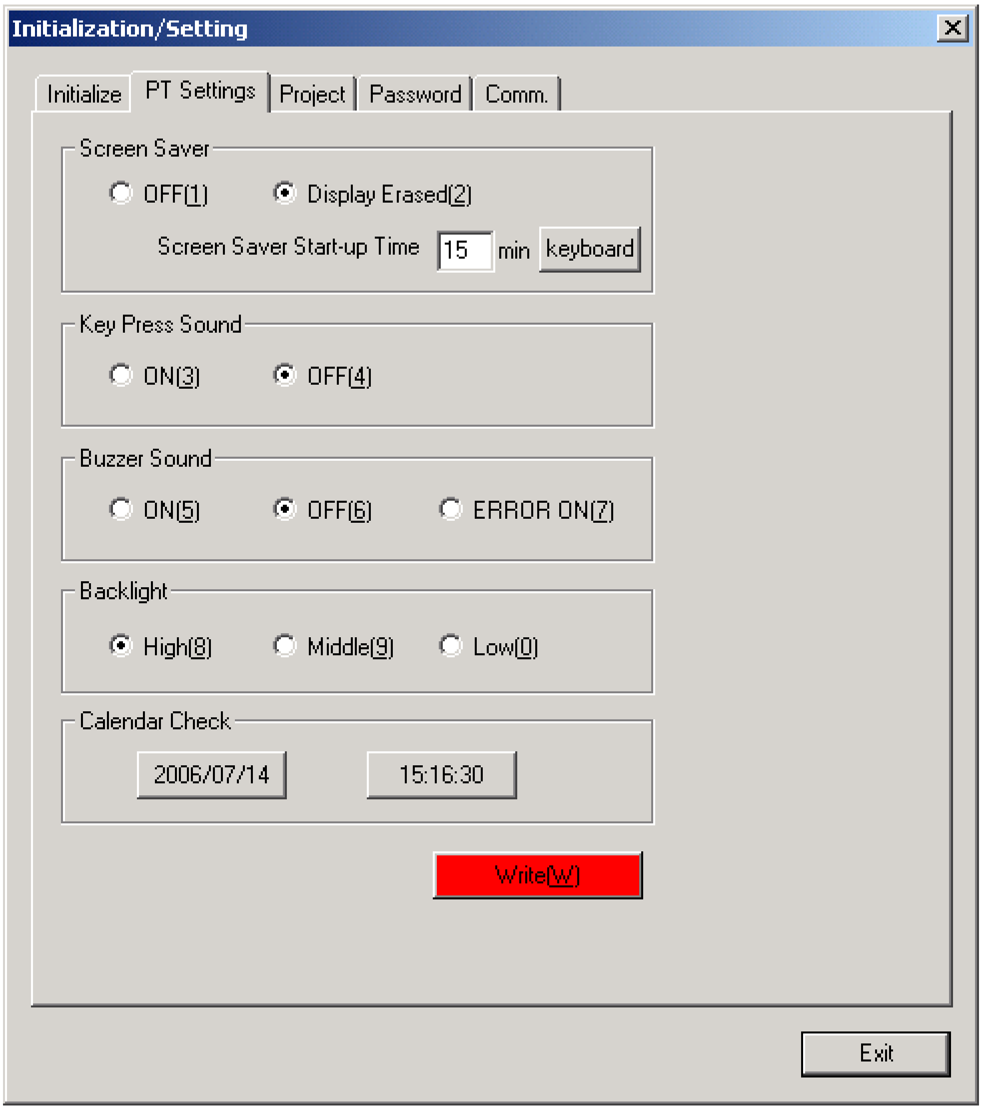



**Reference**

- The internal holding memory ($HB/$HW) can be initialized by turning ON the system memory bit $SB34 from the host. Refer to 2-4 System Memory in the NS Series Programming Manual for details.

## 5-6-2 PT Operations

The PT Settings Tab Page is used to display and make operation settings for each project.




The following functions will be displayed in the PT Settings Tab Page.

| Item | Function |
|---|---|
| Screen Saver | Makes the screen saver settings.<br>Turns OFF the monitor power when the screen saver is enabled, if operations are not performed for a set time. |
| Key Press Sound | Sets whether an input sound is heard when the touch switches are clicked. |
| Buzzer Sound | Sets whether a buzzer sound is heard when a command from the host is received or an error occurs. |
| Backlight | Sets the backlight brightness. (NSA Series only) |
| Calendar Check | Sets and displays the date and the time of the system clock. |
| Write | Writes the settings. |

## Screen Saver

This function is used to turn OFF the monitor power when operations are not performed for a set period of time.

The screen saver start-up time can be set to between 1 and 99 minutes.

Set the screen saver movement by using operations from the PT Settings Tab Page as follows.

1. Select either **OFF** or **Display Erased** for the screen saver.




2. When selecting the Display Erased is selected, set the **Screen Saver Start-up Time** to between 1 to 99 minutes. The value can also be input with a keypad that is displayed by clicking the keyboard button.
3. After setting, click the **Write** Button to save the setting. (For details on the write button, refer to *Writing* on page 5-28.)

**Note**

◆ Clicking any part of the display will cancel the screen saver and display the previously displayed screen. When canceling the screen saver, If the part of the display corresponds to the input for a functional object, the screen saver will only be cancelled. The input for the functional object will not be processed.

## Key Press Sound

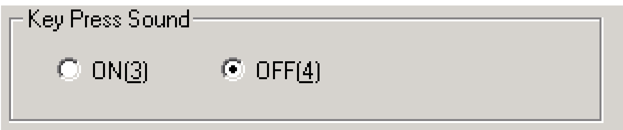
This function is used to set whether an input sound is heard when the touch switches that allow input functions for the NS-Runtime are clicked.

ON: Input sound is heard when the touch switches that allow input functions for the NS-Runtime are clicked.

OFF: Input sound is not heard when the touch switches that allow input functions for the NS-Runtime are clicked.

Set the key press sound by using operations from the PT Settings Tab Page as follows.

1. Select either **ON** or **OFF** for the touch switch input sound.




2. After setting, click the **Write** Button to save the setting. (For details on the write button, refer to *Writing* on page 5-28.)

## Buzzer Sound

This function is used to set whether to sound a buzzer at times such as when a command from the host is received or an error occurs.

ON: Buzzer turns ON when a command is received from the host or an error occurs.
OFF: Buzzer is OFF.
ERR ON: Buzzer turns ON when an error occurs only.

**Note**

- ◆ Other commands and settings associated with the buzzer exist, but the settings here have the highest priority.
- ◆ When the buzzer is set to ON or ERR ON, the buzzer will be also heard when messages are displayed with a cross (X) or exclamation mark (!) icon.
- ◆ For details on the buzzer function, refer to 2-18-6 Buzzer Function in the NS Series Programming Manual.

Set the buzzer to ON/OFF/ERROR ON by using operations from the PT Tab Page as follows.

1. Select either **ON**, **OFF**, or **ERROR ON** for the buzzer sound.




2. After setting, click the **Write** Button to save the setting. (For details on the write button, refer to *Writing* on page 5-28.)

## Backlight

This function is used to set backlight brightness. (NSA Series only)

Set the backlight brightness by using operations from the PT Tab Page as follows.

1. Select the High, Middle or Low for the Backlight.



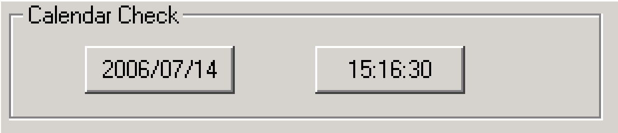

2. After setting, click the **Write** Button to save the setting. (For details on the write button, refer to *Writing* on page 5-28.)

## Calendar Check

This function is used to set the time and date.

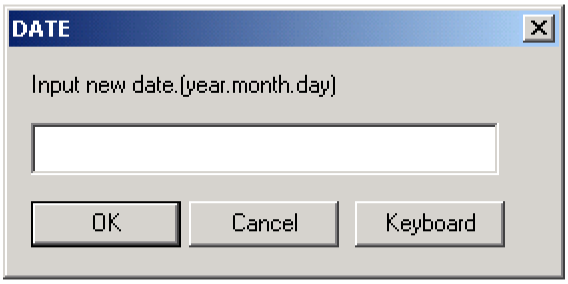
Set the date and time by using operations from the PT Tab Page as follows.

1. Select either date or time for the Calendar Check.




2. The following dialog box will be displayed.
   Use the following methods for setting new date and time.
   -Directly input from the hardware keyboard.
   -Input from the keypad. (A keypad will be displayed by clicking the Keyboard Button.)

<Setting the date>



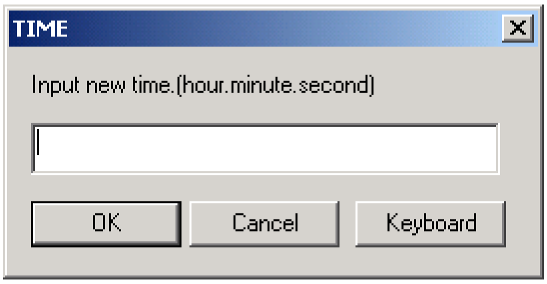

-Use the following input format to set the date.

yyyy.mm.dd (yyyy: year, mm: month, dd: day)

Set the year using four digits.

Example: Set January 1st, 2006 as **2006.1.1**. (Adding 0 prefix to single-digit settings is not required.)

<Setting the time>




-Use the following input format to set the time.

hh.mm.ss (hh: hour, mm: minute, ss: second)

Set the year using the 24-hour clock.

Example: Set 06:01:01 p.m. as **18.1.1**. (Adding 0 prefix to single-digit settings is not required.)

3. Click the **OK** Button to enable the settings.
4. When an incorrect date or time is set, the following dialog box will be displayed.
   Click the **OK** Button to set a correct date or time again.

<Setting the date>




<Setting the time>




5. After setting, click the **Write** Button to save the setting. (For details on the write button, refer to *Writing* below.)

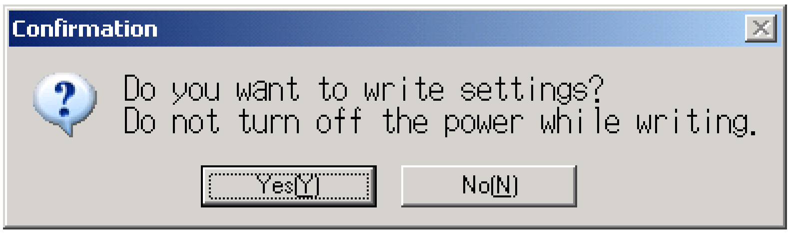
## Writing

This function is used to write settings. When changing each setting, make sure to click the **Write** Button. If the Write Button is not clicked, settings will not be changed.

1. Click the Write Button.




The following dialog box will be displayed. Click the **Yes** Button to write the settings. Click **No** Button to cancel the settings.




2. When the writing has been completed, the following dialog box will be displayed.

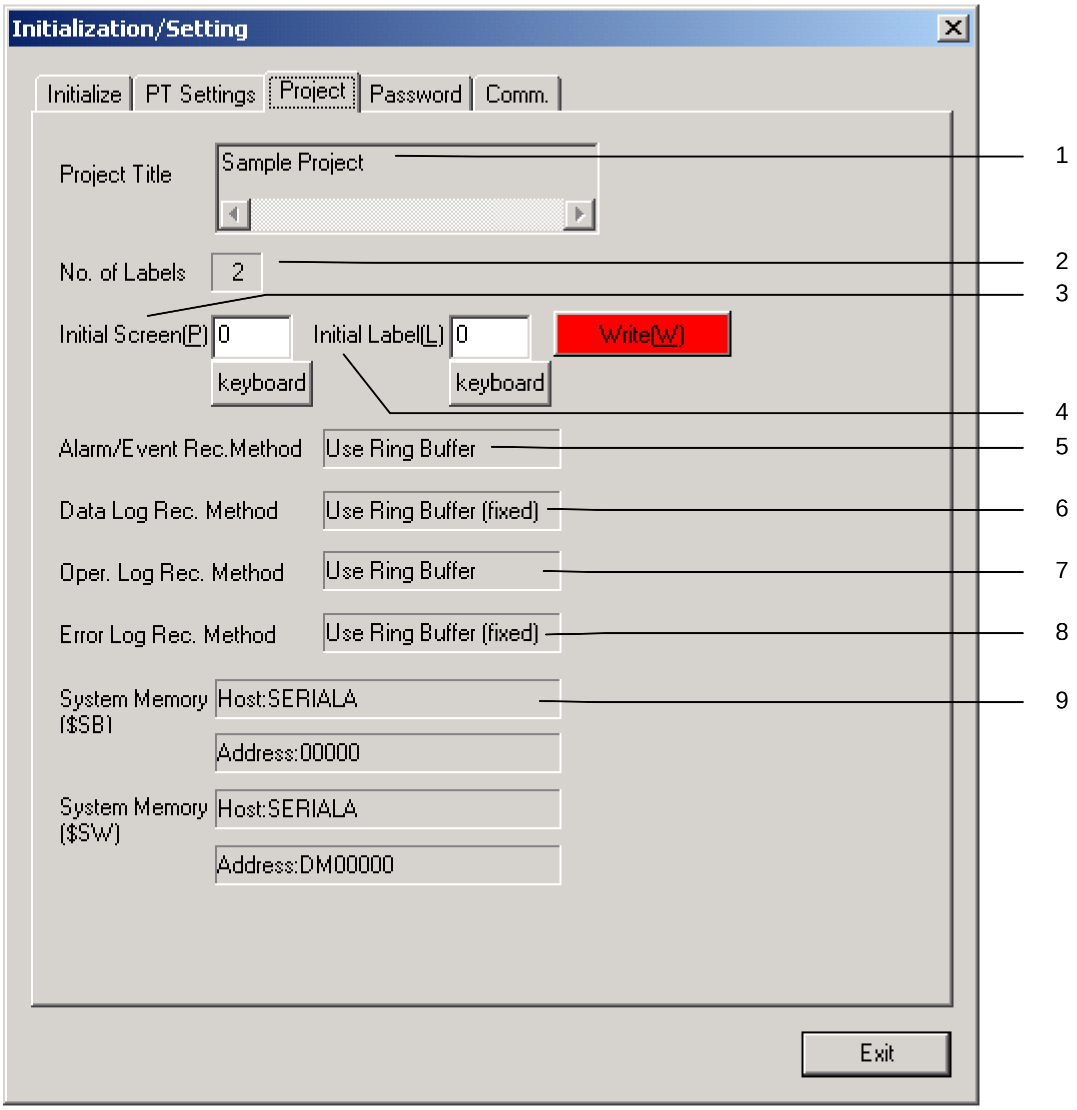



***Note***

◆ Do not turn OFF the power while writing.

## 5-6-3 Project Settings

The Project Tab Page is used to set and display project related information.



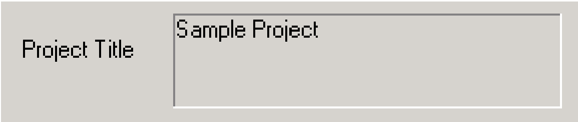

The following items are displayed in the Project Tab Page.

| No | Item | Function |
|---|---|---|
| 1 | Project Title | Displays the project title. |
| 2 | No. of Labels | Displays the number of labels set for the project. |
| 3 | Initial Screen | Sets and displays the screen numbers first displayed after the NS-Runtime is started. |
| 4 | Initial label | Sets and displays the label number shown on the screen after the NS-Runtime is started. |
| 5 | Alarm/Event Rec. Method | Displays the method for recording the alarm/event histories. |
| 6 | Data Log Rec. Method | Displays the method for recording the data log. |
| 7 | Oper. Log Rec. Method | Displays the method for recording the operation log. |
| 8 | Error Log Rec. Method | Displays the method for recording the error log. |
| 9 | System Memory | Displays the allocated hosts and addresses of the system memory ($SB/$SW). |

## Project Title

This function is used to display the project title.

The title is read-only and cannot be edited.




## The Number of Labels

Multiple label data can be created in each project. This function displays the number of labels set for the project that is registered in the NS-Runtime. The number of labels is read-only and cannot be edited.




### Note

◆ For details on multiple labels settings for a project, refer to the System Settings and Project Properties in the CX-Designer’s Online Help.

◆ For information on how to set multiple labels for a functional object, refer to Labels in 2-8 Common Functional Object Functions in the NS Series Programming Manual.

## Initial Screen

This function is used to set and display the screen number of the screen that is first displayed when the NS-Runtime is started.

Set the initial screen number to between 0 and 3999.

Set and display the initial screen number by using operations from the Project Tab Page as follows.




1. The number of the screen that is displayed when the NS-Runtime is started is displayed in the initial screen field.
2. To change the initial screen number, input the screen number. The value can also be input using a keypad that is displayed by clicking the keyboard button.
3. After setting, click the **Write** Button to save the setting. (For details on the write button, refer to *Writing* on page 5-28.)

### Reference

◆ The initial screen number can also be set from the CX-Designer.

## Initial Label

This function is used to set and display the label number that is shown on the screen when the NS-Runtime is started.

The initial number can be set to between 0 to (the number of label minus 1).

Set and display the label number by using operations from the Project Tab Page as follows.




1. The label number that is shown on the screen when the NS-Runtime is started will be displayed on the Initial Label field.
2. To change the initial label, input the label number. The value can also be input using a keypad that is displayed by clicking the keyboard button.
3. After setting, click the **Write** Button to save the setting. (For details on the write button, refer to *Writing* on page 5-28.)

**Reference**

◆ This initial label number can also be set from the CX-Designer.

## Alarm/Event History Recording Method

This function is used to display the method for recording the alarm/event histories.

The alarm/event history recording method is read-only and cannot be edited.

This alarm/event history recording method is set from the CX-Designer.

If a ring buffer is used, when the specified number of records is exceeded, the oldest data is deleted and the new data is recorded.

If the ring buffer is not used, the NS-Runtime stops collecting history data when the specified number of records has been reached. Initialize the alarm/event histories to reopen the history records.




**Reference**

◆ For details on initializing the alarm/event histories, refer to *Initializing and Saving the Alarm/Event History* in this manual.

## Data Log Recording Method

This function is used to display the data log recording method.

The data log recording method is read only and cannot be edited.

The use of a ring buffer for the data log recording method is fixed.

When the specified number of log entries is exceeded, the oldest data is deleted and the new data is recorded.

Use the CX-Designer to set the number of log entries.




**Reference**

◆ For information on the data log, refer to *Initializing and saving Data Log* in this manual and *2-18-3 Data Log Function* in the NS Series Programming Manual.

## Operation Log Recording Method

This function is used to display the method for recording the operation log.

The operation log recording method is read only and cannot be edited.

This operation log recording method is set from the CX-Designer.

If the Use Ring Buffer is set, when the specified number of items is exceeded, the oldest data is deleted and the new data is recorded.

If the log is not saved in ring buffer format, the PT stops collecting log data when the specified number of items has been reached. Initialize the operation log to reopen the record.




### Reference

◆ For details on the operation log, refer to *Initializing and Saving the Operation Log* in this manual and 2-18-1 Operation Log Function in the NS Series Programming Manual.

## Error Log Recording Method

This function is used to display the error log recording method.

The error log recording method is read only and cannot be edited.

The use of a ring buffer for the error log recording method is fixed.

When the maximum number of items is exceeded, the oldest data is deleted and the new data is recorded.

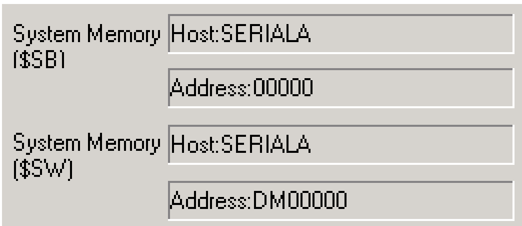



### Reference

◆ For details on the error log, refer to *Initializing and Saving the Error Log* in this manual and 2-18-4 Error Log Function in the NS Series Programming Manual.

## System Memory

The allocated location in the host and address is displayed in the System Memory ($SB and $SW) and cannot be edited.




### Reference

◆ Refer to 2-4 System Memory in the NS Series Programming Manual for details on the system memory.

## 5-6-4 Setting Passwords

The NS-Runtime's password function is divided into the following two functions.

-Password Function

Requires a password input before allowing operations on a password-protected functional object.

-Password with Levels Function

Requires a password for authentication when performing operations on a password-protected functional object for the first time.

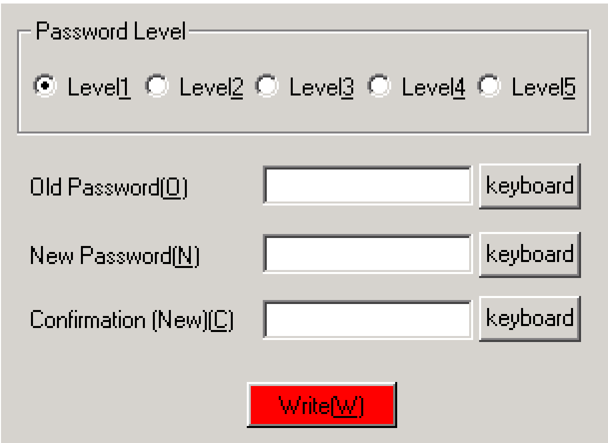
Once authentication has been completed, operations can be performed on all functional objects of the same or lower password levels.

Operations cannot be performed on functional objects protected with higher-level passwords.

The passwords are set from the CX-Designer and up to five passwords (5 levels) can be set for a single project. The passwords can be set and changed from the System Menu.

### Changing the Password

Perform the following procedure from the Password Tab Page to change the password.

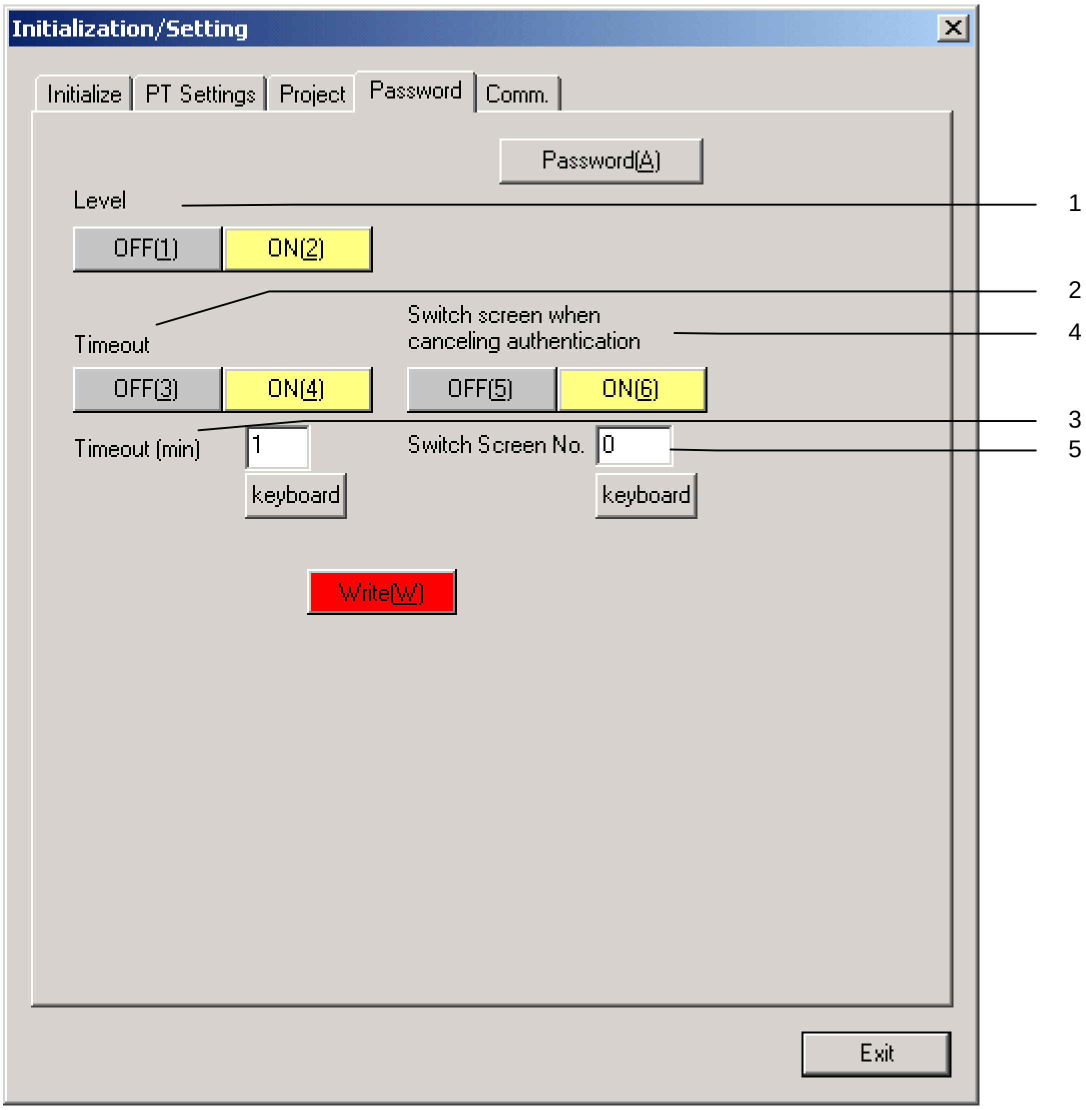



1. Select the password to be changed using the **Level 1** to **Level 5** Buttons
2. Input the old password and new password in the corresponding fields, and then input the new password again in the confirmation field.
   The "*" symbols are displayed for the password and the actual password will not be shown on the screen.
   Input the password using the input keyboard or directly using the hardware keyboard.
3. After setting, click the **Write** Button to save the setting. (For details on the write button, refer to *Writing* on page 5-28.)

## Setting the Password Function

Perform the following procedure to set a password.

1. Open the **Password** Tab Page and click the Password Button.




| No | Item | | Function |
|---|---|---|---|
| 1 | Level | | Click the **OFF** (password) or **ON** (password with levels) Button to select the function. |
| 2 | Timeout | | Select the **ON** or **OFF** Button to specify whether authentication is automatically canceled (timed out) after a set time has elapsed. This option can be set when the password with levels function has been turned ON. |
| | | On | A user is automatically timed out if there are no functional object operations within the timeout time. |
| | | OFF | Authentication is not automatically canceled. To cancel authentication, click a command button set for cancellation. |

<table>
<tr><th>No</th><th colspan="2">Item</th><th>Function</th></tr>
<tr><td>3</td><td colspan="2">Timeout (min)</td><td>When the Timeout Option is set to ON, this setting specifies the timeout time in minutes (1 to 60 minutes).</td></tr>
<tr><td rowspan="3">4</td><td colspan="2">Switch screen when canceling authentication.</td><td>Click the ON or OFF Button to specify whether the screen is automatically switched to a specified screen when authentication is canceled.<br>This option can be set when the password with levels function has been turned ON.</td></tr>
<tr><td></td><td>ON</td><td>The screen is switched to the specified Switch Screen No. when authentication is canceled.</td></tr>
<tr><td></td><td>OFF</td><td>The screen is not switched when authentication is canceled.</td></tr>
<tr><td>5</td><td colspan="2">Switch Screen No.</td><td>If the switch screen when authentication is canceled has been turned ON, the screen is changed to the screen number set here when authentication is canceled.</td></tr>
</table>

2. After setting, click the **Write** Button to save the setting. (For details on the write button, refer to *writing on page 5-28*.)
3. To change the password, click the Password Button.

**Note**

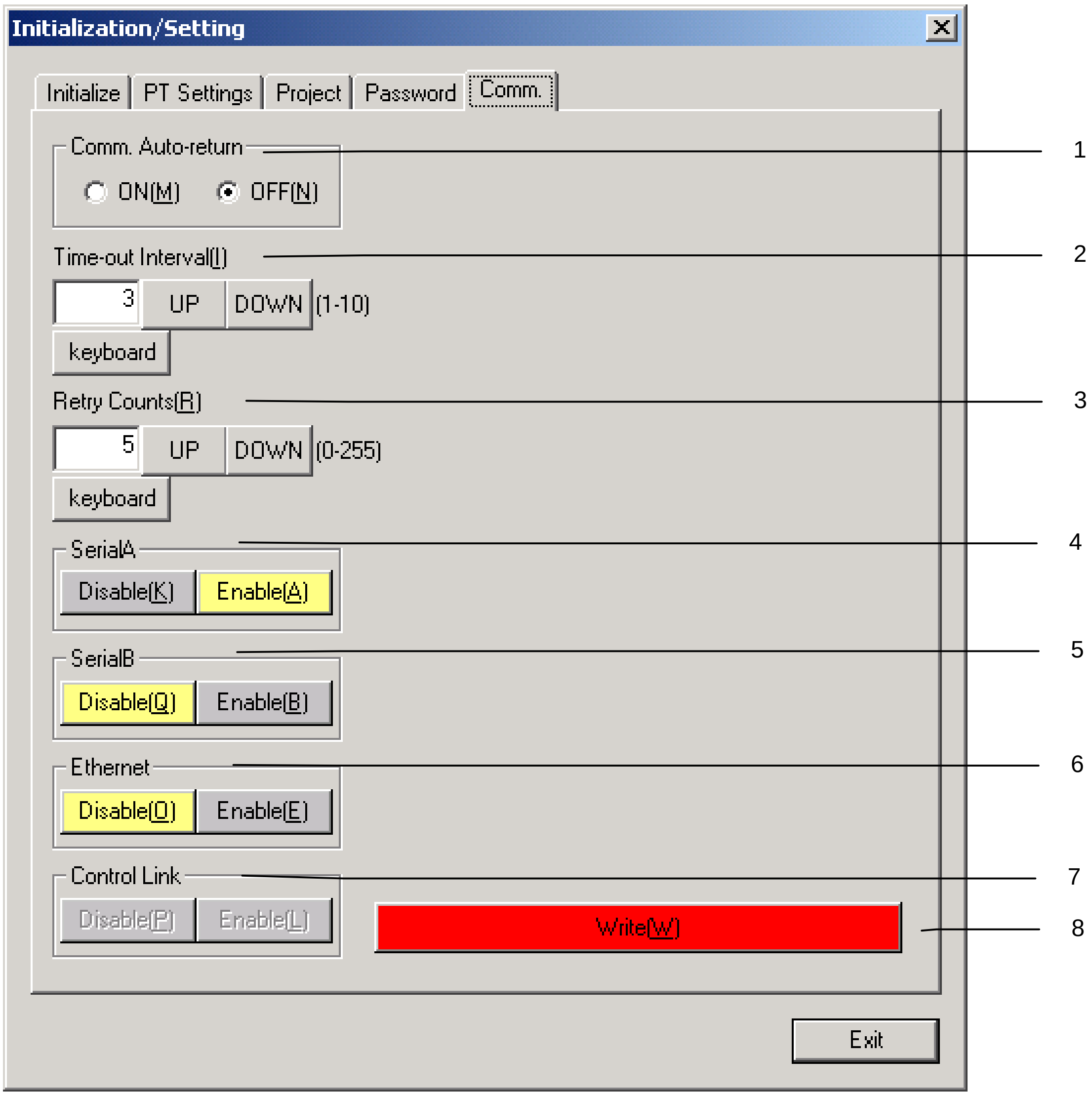
- ◆ When changing passwords, do not end the NS-Runtime until the write operation has been completed (until a write completion message is displayed). If the password is not saved properly, the screen may malfunction.
- ◆ The password settings can also be made from the CX-Designer.
- ◆ If the password is forgotten, it cannot be checked from the NS-Runtime. Check the password using the CX-Designer.

## 5-6-5 Communications Settings

This function is used to display and make communications settings.

After changing settings, click the **Write** Button to save the settings and restart the NS-Runtime.

Changed settings are enabled after the NS-Runtime is restarted.



The following items are displayed in the Comm. Tab Page.

| No | Item | Function |
|---|---|---|
| 1 | Communications Auto-return | Selects whether automatic recovery is used when a communications error occurs. |
| 2 | Time-out Interval | Sets and displays the timeout monitor time. |
| 3 | Retry Counts | Sets and displays the number of communications retries. |
| 4 | Serial A | Sets and displays whether serial port A is used, the communications method and other details. |
| 5 | Serial B | Sets and displays whether serial port B is used, the communications method, and other details. |
| 6 | Ethernet | Sets and displays whether Ethernet is used and communications details. |
| 7 | Controller Link | Sets and displays whether Controller Link is used and communications details. |
| 8 | Write | Writes the settings. |

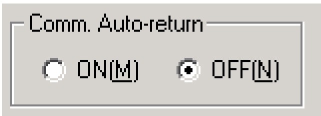
## Communications Auto-return

This function is used to select whether or not to use the communications auto-return using the **ON** and **OFF** Buttons.

ON: The NS-Runtime will automatically return to RUN mode when a communications error occurs, without displaying an error message dialog box.

OFF: The NS-Runtime will stop running when a communications error occurs and an error message dialog box will be displayed. Click the **OK** Button in the error message dialog box to return to RUN mode. The default setting is OFF.

Set the communications auto-return by using operations from the Comm. Tab Page as follows.

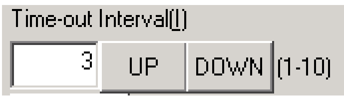



1. Select either ON or OFF for the Comm. Auto-return.
2. After setting, click the **Write** Button to save the setting. (For details on the write button, refer to *Writing* on page 5-28.)
3. The settings are enabled after the NS-Runtime is restarted.

## Time-out Interval

This function is used to set the time before a timeout error occurs when a response is not received from the host. The timeout interval can be set to between 1 and 10 (unit: second). The default setting is 3 seconds.

Set the timeout monitor time by using operations from the Comm. Tab Page as follows.




1. Set the Time-out Interval using the Up and Down buttons or the keypad that are displayed by clicking the Keyboard Button.
2. After setting, click the **Write** Button to save the setting. (For details on the write button, refer to *Writing* on page 5-28.)
3. The settings are enabled after the NS-Runtime is restarted.

## Retry Counts

This function is used to set the number of retries for communications before an error screen will be displayed, when a communications error occurs while communicating with the host.

If communications are still unsuccessful even after the number of communications retries specified here have been executed, the process set for the communications auto return will be executed.

The number of retries can be set to between 0 and 255 times. The default setting is 5 retries.

Set the communications auto-return by using operations from the Comm. Tab Page as follows.




1. Input the value by using the Up and Down buttons or the keypad that are displayed by clicking the Keyboard Button.
2. After setting, click the **Write** Button to save the setting. (For details on the write button, refer to *Writing* on page 5-28.)
3. The settings are enabled after the NS-Runtime is restarted.

## Serial A / Serial B

This function is used to display and set whether to use the serial ports A /B and the communications conditions.

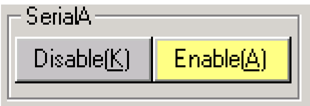
***Note***

◆ The NS-Runtime supports the host link and toolbus when the serial ports A/B is used for the communications.

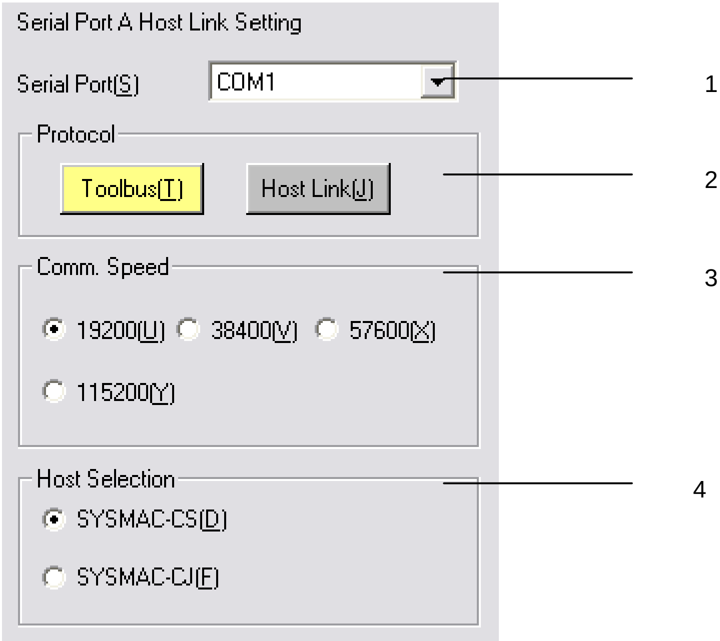
Make the settings for the serial port A by using operations from the Comm. Tab Page as follows.

In the same way, make the settings for the serial port B.

1. Select the **Disable** / **Enable** for the Serial A.




2. When selecting the Enable, set and display the details of serial port A.




| No | Item | Function | Setting Range |
|---|---|---|---|
| 1 | Serial Port | Selects the serial port to be used to connect to the host. | Select any port that can be used with the NS-Runtime environment. |
| 2 | Protocol | Selects the method for connecting to the host. | Toolbus, Host Link |
| 3 | Comm. Speed | Selects the baud rate. | 19200,38400,57600 or 115200 |
| 4 | Host Selection | Selects the host type. | SYSMAC-CS or SYSMAC-CJ |

3. After setting, click the **Write** Button to save the setting. (For details on the write button, refer to *Writing* on page 5-28.)
4. The settings are enabled after the NS-Runtime is restarted.

## Ethernet

This function is used to display and set whether to use the Ethernet and the detailed conditions.

IP address, subnet mask, and default gateway cannot be set from the system menu.

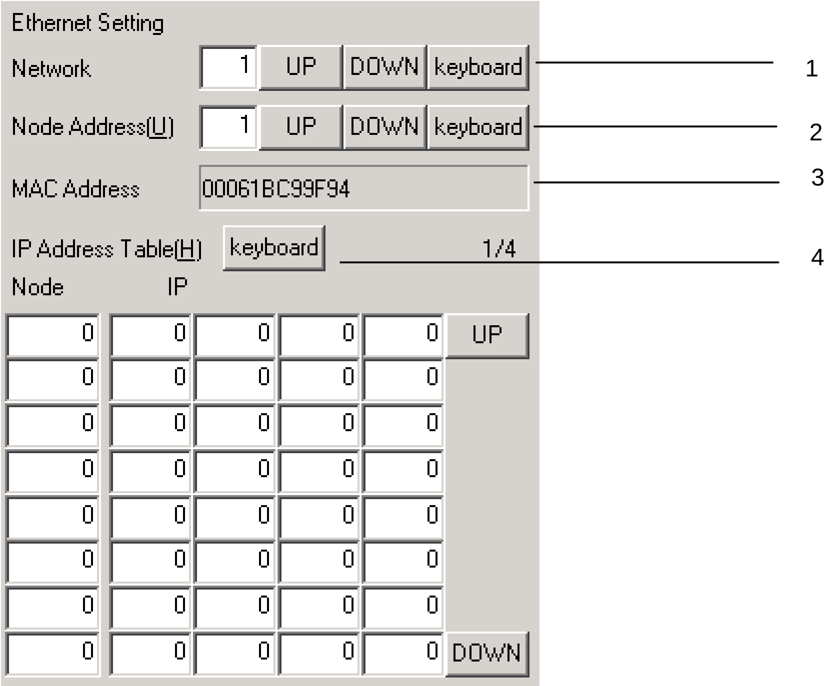
To change the settings, change them from the **Control Panel** – **Network Connections** of the Windows.

Make the Ethernet settings by using operations from the Comm. Tab Page as follows.

1. Select **Disable** or **Enable** for the Ethernet.




2. When selecting the Enable, set and display the Ethernet details. To change the settings, use UP and DOWN Buttons, or a keypad that is displayed by clicking the keyboard button.




| No | Item | Function | Setting Range |
|---|---|---|---|
| 1 | Network | Sets and displays the local network address. | 1 to 127 |
| 2 | Node Address | Sets and displays the local node address. | 1 to 254 |
| 3 | MAC Address | Displays MAC Address. | Read-only |
| 4 | IP Address Table | Sets and displays the node numbers and IP addresses of other nodes connected through Ethernet. | Node: 1 to 255<br>IP Address :0.0.0.0 to 255.255.255.255 |

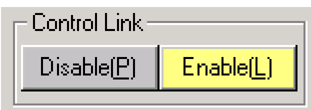
3. After setting, click the **Write** Button to save the setting. (For details on the write button, refer to *Writing* on page 5-28.)
4. The settings are enabled after the NS-Runtime is restarted.

## Controller Link

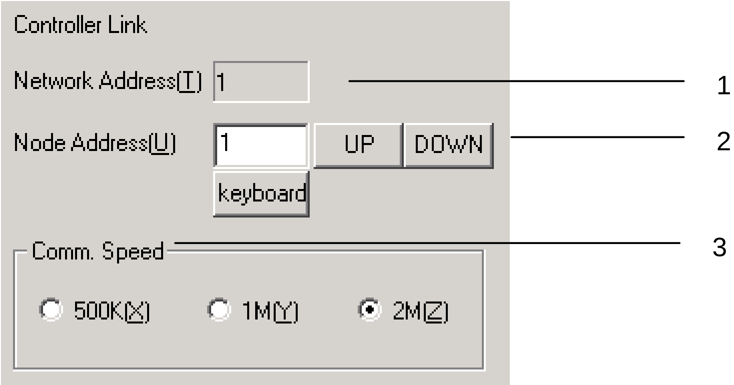
This function is used to set and display whether to use Controller Link and detailed conditions.

Make the Controller Link settings by using operations from the Comm. Tab Page as follows.

1. Select **Disable** or **Enable** for the Controller Link.



2. When selecting the Enable, set and display the Controller Link details. To change the settings, use UP and DOWN Buttons, or the keypad that is displayed by clicking the keyboard button.




| No | Item | Function | Setting Range |
|---|---|---|---|
| 1 | Network Address | Sets and displays the local network address. | Read-only |
| 2 | Node Address | Sets the local node address. | 1 to 254 |
| 3 | Comm. Speed | Sets the baud rate. | 500K, 1M, 2M |

3. After setting, click the **Write** Button to save the setting. (For details on the write button, refer to *Writing* on page 5-28.)
4. The settings are enabled after The NS-Runtime is restarted.

# 5-7 System Language

Either Japanese or English can be set as the system language. The system language will be used on the system menu, keypads, message dialog boxes, etc, on the NS-Runtime.

The system language is displayed in the System Menu using the following procedure.




1. Click the **Display** Button for the system language. The system language screen will be displayed.



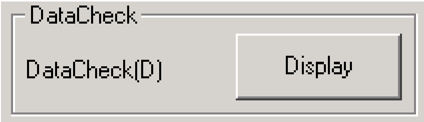

2. Click the **OK** Button to switch the system language.
   Click the **Cancel** Button not to switch the system language.

# 5-8 Screen Data Check

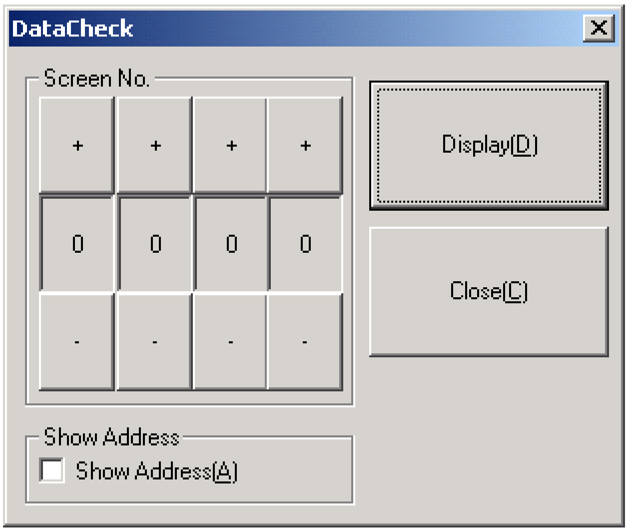
Registered screens (numbers 0 to 3,999) can be displayed and checked using operations from the System Menu.

> **Note**
> ◆ The screen displayed when checking screen data is a sample and cannot be used to communicate with the host. The flicker function is also disabled.

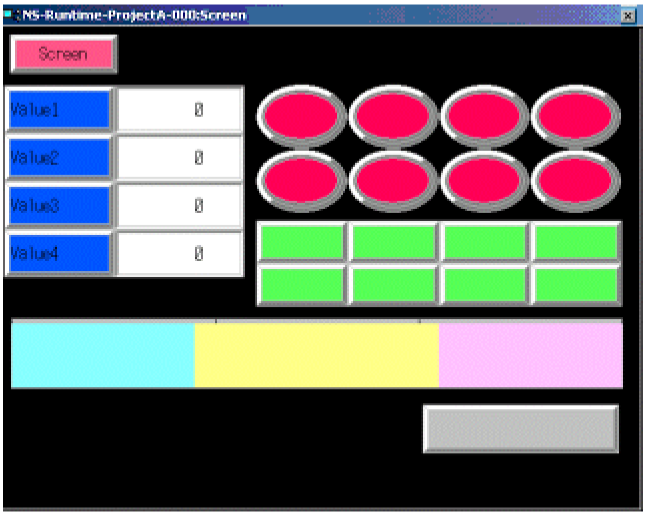
Display the DataCheck Screen by using the following procedure from the System Menu.




1. Click the Display Button next to the Data Check in the system menu. DataCheck Screen will be displayed.

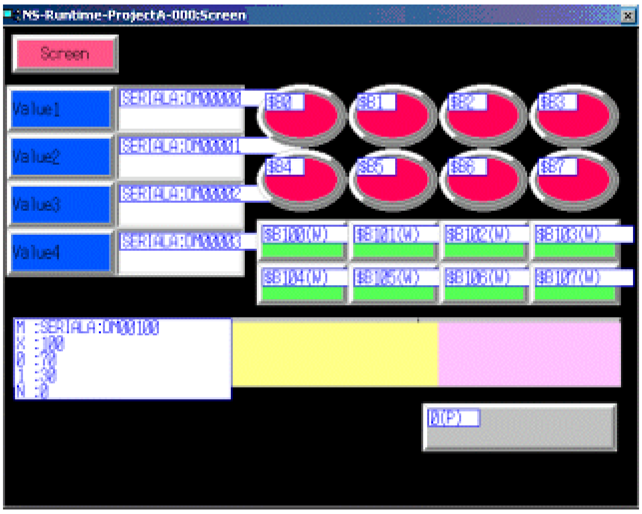



2. Set the screen number and click the **Display** Button. The screen will be displayed as a sample on another screen.

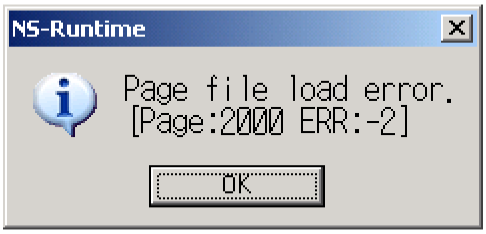


> **Note**
>
> ◆ The window size will be the same as the created screen size. The window size cannot be changed.
>
> ◆ Document display object will not be displayed.

3. Select the **Show Address** and display the sample screen to display the set address instead of the label objects.



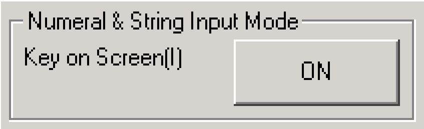

4. If the specified screen number does not exist, the following dialog box will be displayed. Specify an existing screen number.




5. Click the displayed sample screen to go back to the DataCheck screen.

# 5-9 Numeral & String Input Mode

This function is used to set whether to use virtual keyboard and keypad to input numerals and strings to functional objects.

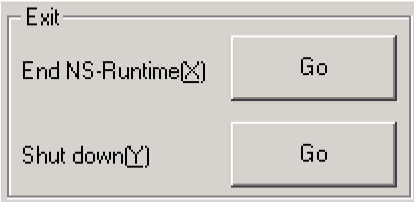



Turn ON the Key on Screen to input numerals and strings with virtual keyboard and keypad.

Turn OFF the Key on Screen to input them with hardware keyboard. The default setting is ON.

# 5-10 Exit

This function is used to execute the end processing.




| Item | Function |
|---|---|
| End NS-Runtime | Ends the NS-Runtime. |
| Shut down | Ends the NS-Runtime and shuts down Windows. |

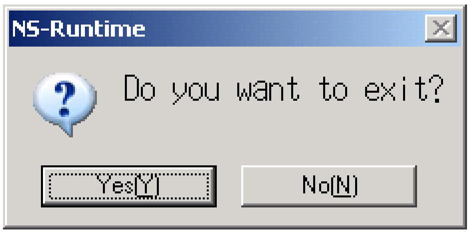
This section describes how to use these functions.

## 5-10-1 End NS-Runtime

This function is used to end the NS-Runtime.

End the NS-Runtime by using the following procedure from the System Menu.

1. Click the **Go** Button next to the End the NS-Runtime. The following message confirming the end will appear.
2. Click the **Yes** Button to end the NS-Runtime. Click the **No** Button to cancel the end function.




***Reference***

◆ The NS-Runtime can also be shut down by turning On the $SB63 in the system memory.

## 5-10-2 Shut Down

This function is used to end the NS-Runtime and shut down Windows.

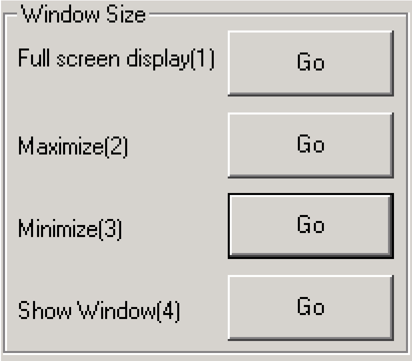
End the system by using operations from the System Menu as follows.

1. Click the **Go** Button next to the Shut down. The following message confirming the end will appear.
2. If the **Yes** Button is clicked the NS-Runtime will end and then Window will shut down. If the **No** Button is clicked both the NS-Runtime and Windows will not end.



# 5-11 Window Size

This function is used to change the main window size. User can select the Full screen display, Maximize, Minimize or Show window as the main window size.




| Item | Function |
|---|---|
| Full screen display | Displays the NS-Runtime main window in a full screen. |
| Maximize | Maximizes the NS-Runtime main window. |
| Minimize | Minimizes the NS-Runtime main window. |
| Show Window | Displays the NS-Runtime main window in the specified size. |

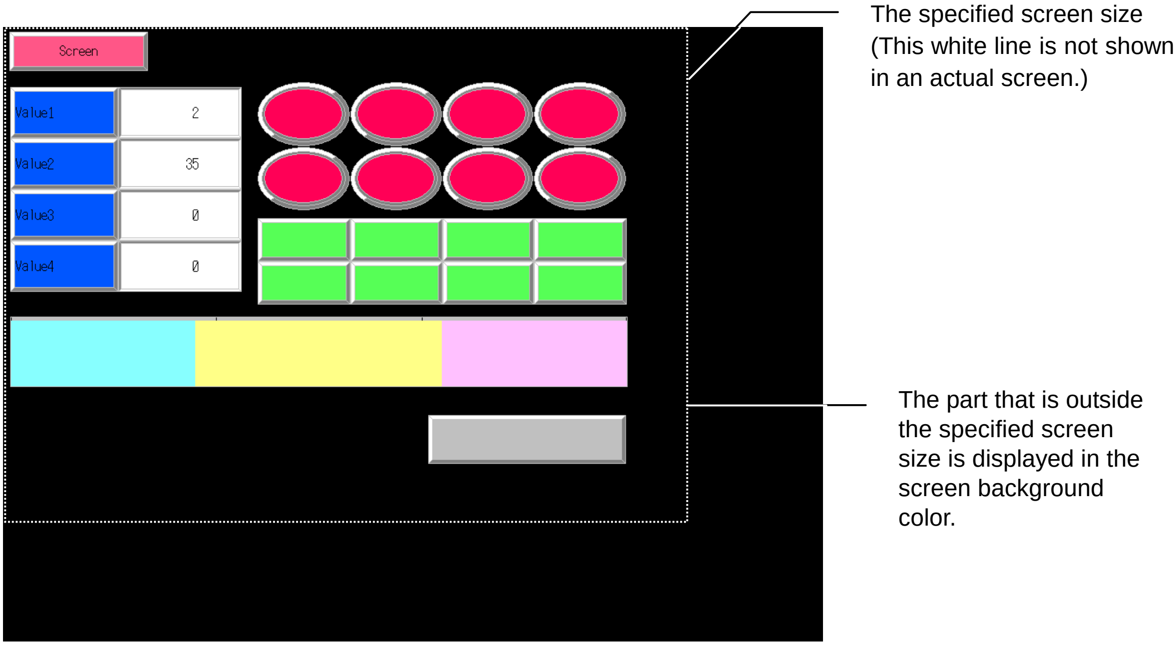
***Reference***

◆ Immediately after the NS-Runtime startup, the main window will be displayed in a full screen.

This section describes how to use these functions.

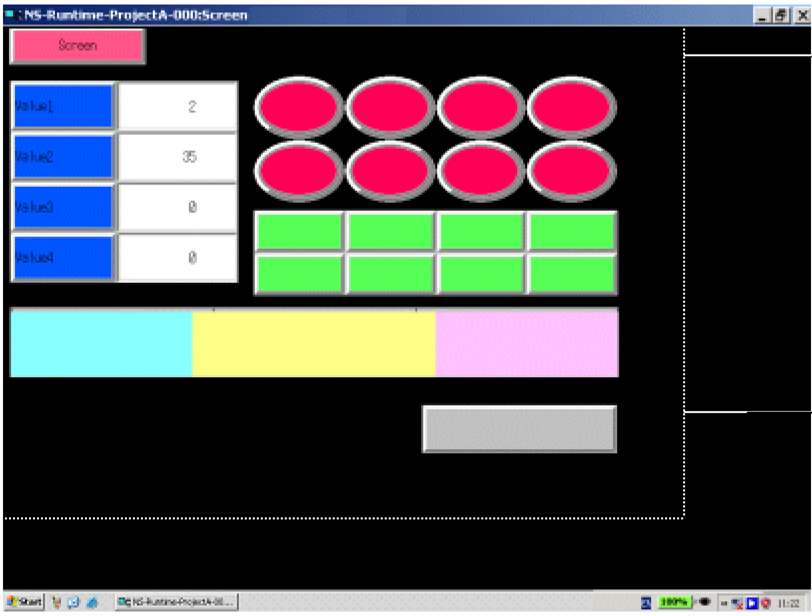
## 5-11-1 Full screen display

1. Click the **Go** Button next to the Full screen display. The NS-Runtime main window will be displayed in a full screen.



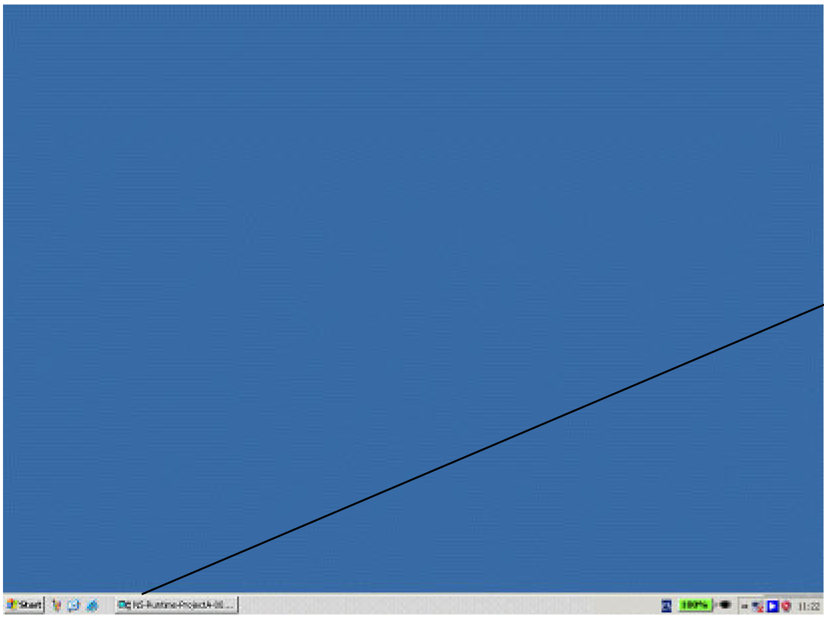
## 5-11-2 Maximize

1. Click the **Go** Button next to the Maximize. The NS-Runtime main window will be maximized.
   The NS-Runtime main window will be displayed on the whole screen except for the taskbar.



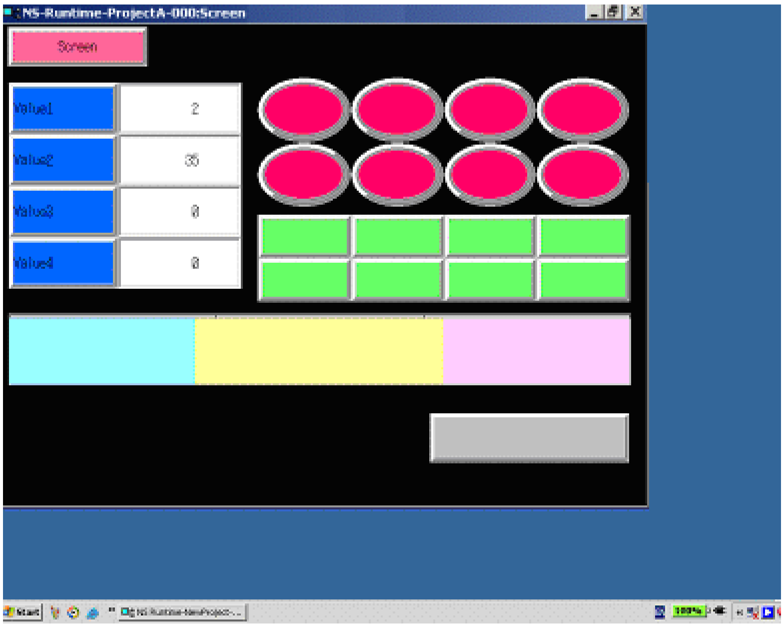

## 5-11-3 Minimize

1. Click the **Go** Button next to the Minimize. The NS-Runtime main window will be minimized.
   Click the button on the taskbar to return to the previous size.



## 5-11-4 Show Window

1. Click the **Go** Button next to the Show Window. The NS-Runtime main window will be displayed in the specified size.
   If the window size is smaller than the size specified with the screen data, this function displays only the left-top part of the screen that is within the specified size. In this case, scroll bars will not be displayed.



# Section 6

# Transferring Project Data

This section describes how to send created or modified screen data to the NS-Runtime environment including the NSA Series and to register them. It also describes how to read data registered in the NS-Runtime.

# 6-1 Transfer Methods

Use the following methods to transfer project data to the NS-Runtime.

| Method | When to use |
|---|---|
| Transfer using memory card | When the environment in which screens are created with the CX-Designer and the NS-Runtime environment differ. |
| Transfer from CX-Designer | When the CX-Designer has been installed in the NS-Runtime environment. |

**Note**

◆ To transfer via memory cards, refer to the Appendix –9 List of Optional Products in the NS Series Setup Manual and use recommended memory cards and memory card adapters.

# 6-2 Transferring Data Using a Memory Card

If the environment in which screens are created with the CX-Designer and the NS-Runtime environment differ, transfer the project data using a memory card.

The procedures for transferring (downloading) data to the NS-Runtime are described as below.

| |
|---|
| Transfer project data from the CX-Designer to a memory card. |
| ↓ |
| Insert the memory card that has project data in the NS-Runtime environment. |
| ↓ |
| Start up the transfer screen of the NS-Runtime.<br>(If NS-Runtime is running, exit the NS-Runtime.) |
| ↓ |
| Transfer the project data from the memory card to the NS-Runtime. |
| ↓ |
| Start up the NS-Runtime |

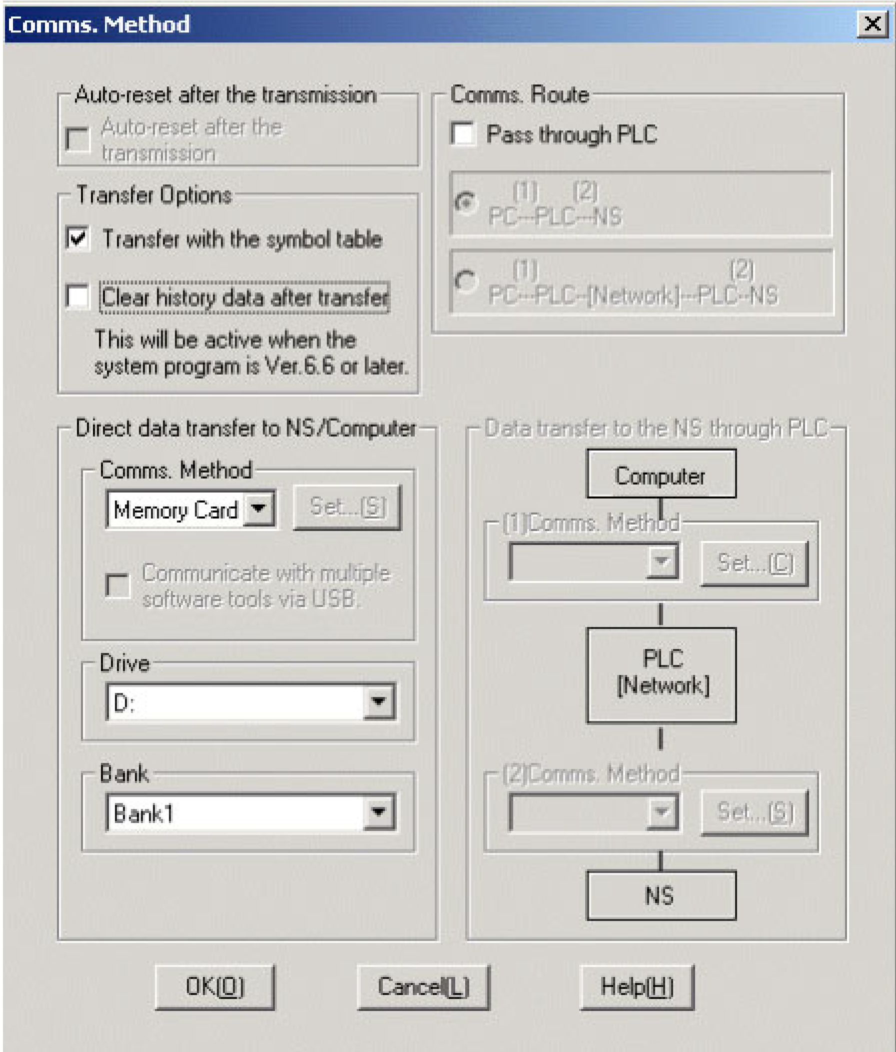
**Note**

◆ To upload data from the NS-Runtime, conduct the opposite procedure.

## 6-2-1 Downloading the Project Data

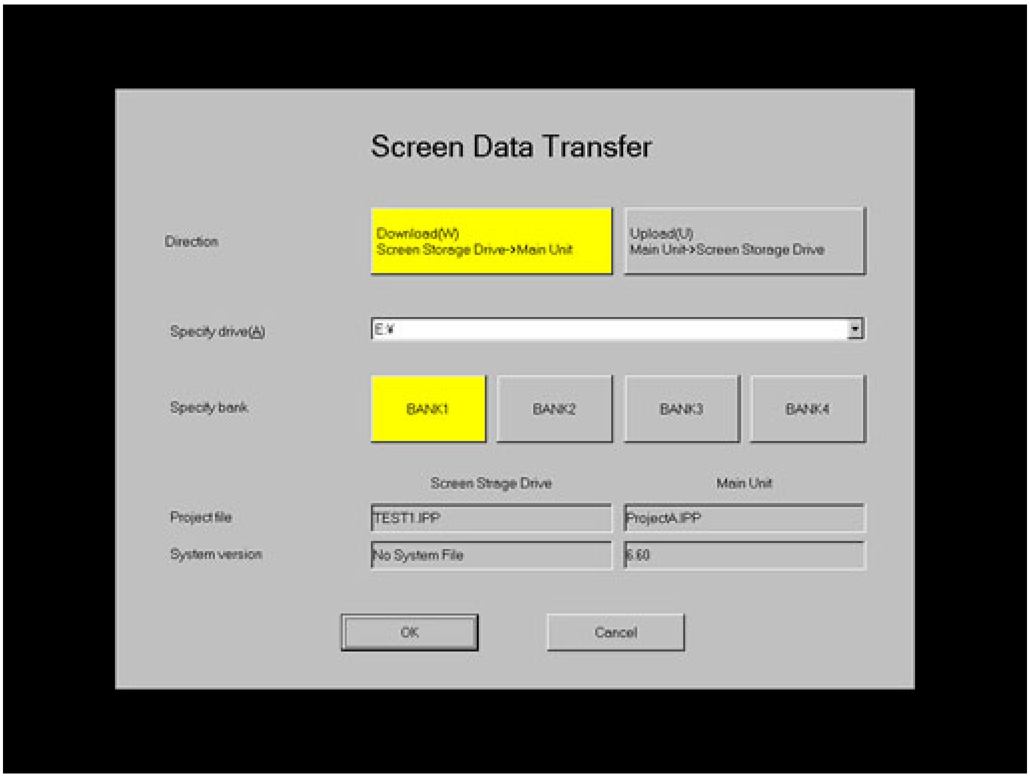
Use the following procedures to download the project data.

1. Insert a memory card in the CX-Designer environment.
2. From the CX-Designer, display the **Comms.Method Dialog Box** by any of the following ways.
   -Select **PT** Menu – **Transfer** – **Transfer Setting**
   -Select **PT** Menu – **Transfer** – **Quick Transfer [To PT]**. Click the **Setting** Button in the displayed dialog box.
   -Select **PT** Menu – **Transfer [To PT]**. Click the **Setting** button in the displayed dialog box.
   -Select **PT** Menu – **Transfer - Transfer Program**. Click the **Comms.Method** button in the displayed Screen Data Transfer Dialog Box.




3. Select the **Memory Card** from the Comm.Method.
   Specify a drive with the **Drive**. (A memory card must be inserted in the drive).
   Specify a bank with the **Bank** to transfer project data.
4. Click the **OK** Button to close the Comms.Method Dialog Box.

5. Transfer the project data by any of the following ways.
   -**PT** Menu – **Transfer** – **Quick Transfer [To PT]** Menu.
   (Use this method when the project data has been transferred already and you want to send only changed data to the NS-Runtime.)
   -**PT** Menu – **Transfer** – **Transfer [To PT]**
   (Use this method to send all project data to NS-Runtime.)
   -Screen data Transfer Program (**PT** Menu **– Transfer** –**Transfer Program**)
6. Insert the memory card that has project data in an NS-Runtime environment.
7. If the NS-Runtime has already started up, start up the transfer screen from the Screen Transfer in the System menu. (A confirmation message will be displayed to ask whether to exit the NS-Runtime. Click the **OK** Button and end the NS-Runtime.)
   If the NS-Runtime is not started up, start up the transfer screen from the Windows as follows.
   (Windows **Start** – **All Programs** – **OMRON** – **NS-Runtime** – **DriveTrans**)
8. The following screen will be displayed.




9. Select the **Download** from the Direction.
   Specify a drive with the Specify drive. (A memory card must be inserted in the drive.)
   Specify a bank that has project data with the Specify bank.
   The Project file field and the System version field show the project information that is stored in specified bank of the memory card and in the NS-Runtime. Check the information and click the **OK** button.

10. A confirmation dialog box will be displayed to ask whether to clear history data or not. Select either **Yes** or **No**. Then click the **OK** button.




11. A warning dialog box will be displayed, if the data of models, system programs/screen data versions and languages are different between data stored in the NS-Runtime and data stored in the memory card.
    If the transfer is possible, transfer will be executed when **OK** button is clicked.
    If the transfer is impossible or if the **Cancel** button is clicked, the screen will go back to the step 8. Select the project to transfer again.

12. When the transfer starts, project data that has been stored in the NS-Runtime will be deleted.
While data is being transferred, screen indicating that download in progress will be displayed. On completion of the transfer, the **Transmission Complete** screen will displayed.




13. Click the **Restart** button to close the transfer screen and to end the NS-Runtime.
Click the **Exit** button to close the transfer screen.

**Note**

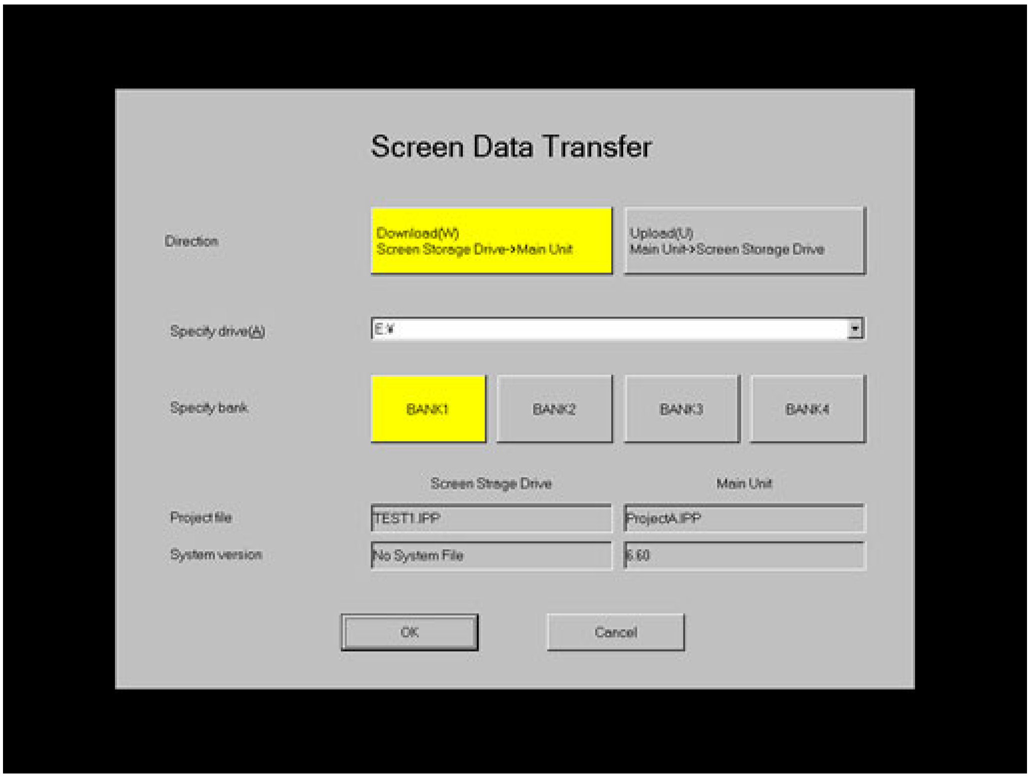
◆ The methods for using CX-Designer's Menus and screen data transfer program are the same as those of the NS Series. For details, refer to the Transferring Data to the PT in the CX-Designer Online Help.

## 6-2-2 Uploading the Project Data

Use the following procedures to upload the project data.

1. Insert a memory card in the NS-Runtime environment.
2. If the NS-Runtime has already started up, start up the transfer screen from the Screen Transfer in the System Menu. (A confirmation message will be displayed to ask whether or not to exit the NS-Runtime. Click the **OK** button and end the NS-Runtime.)
If the NS-Runtime is not started up, start up the transfer screen from the Windows.
(Windows **Start** – **All Programs** – **OMRON** – **NS-Runtime** – **DriveTrans**)

3. The following screen will be displayed.




4. Select the **Upload** from the Direction.
   Specify a drive with the Specify drive. (A memory card must be inserted in the drive)
   Specify a bank that has project data with the Specify Bank.
   The Project file field and the System version field show the project information that is stored in specified bank of the memory card and in the NS-Runtime.
   Confirm the information and click the **OK** button.

5. Transfer confirmation screen will be displayed. Click the **OK** button to execute the transfer.




6. While data is being transferred, screen indicating that upload in progress will be displayed. On completion of the transfer, the **Transmission Complete** screen will be displayed.




7. Click the **Restart** button to close the transfer screen and to restart the NS-Runtime. Click the **Exit** button to close the transfer screen.

8. Take out the memory card from the NS-Runtime environment.
9. Insert the memory card in a computer in which CX-Designer has been installed.
10. Start up the CX-Designer. Then upload the project data from the memory card.

**Note**

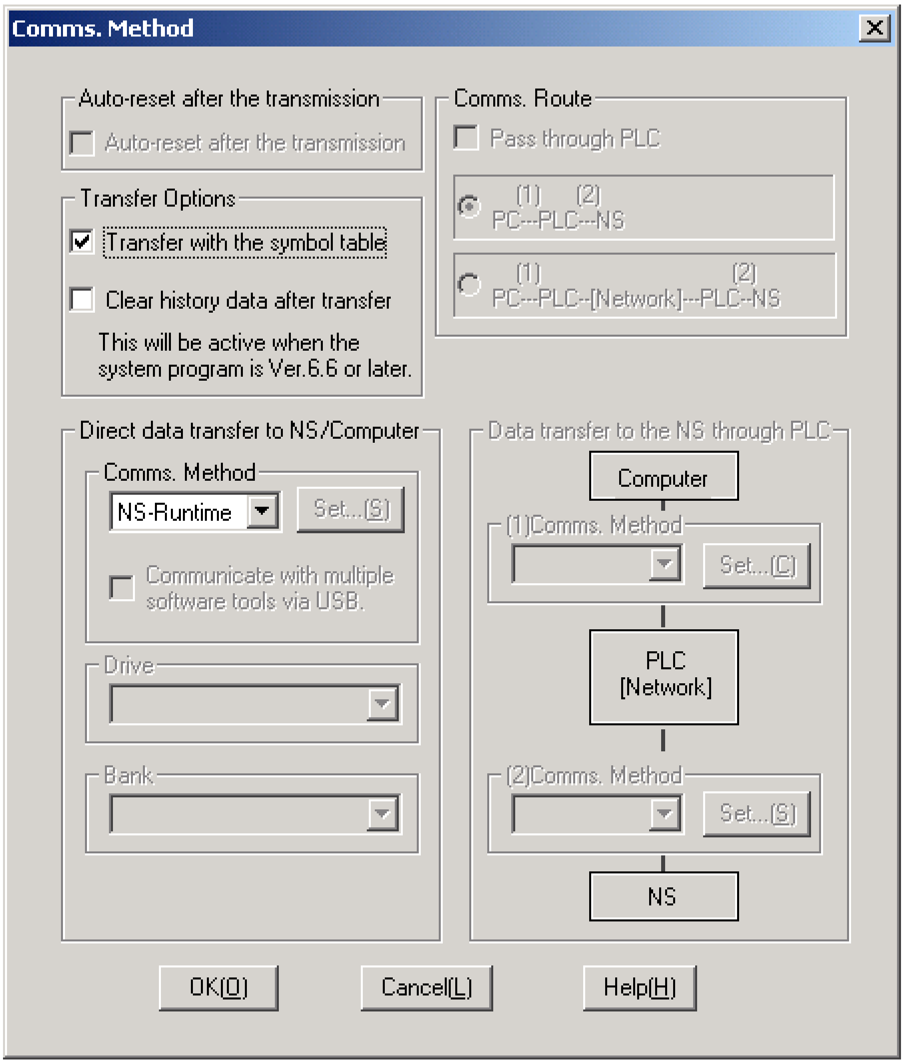
◆ The methods for using CX-Designer's Menus and screen data transfer program are the same as those for the NS Series. For details, refer to the Transferring Data to the PT in the CX-Designer Online Help.

# 6-3 Transferring Data from the CX-Designer

If the CX-Designer has been installed in the NS-Runtime environment, project data edited with the CX-Designer can be downloaded/uploaded to the NS-Runtime. Use the followings transfer procedures.

1. Exit the NS-Runtime.
2. Display the **Comms.Method Dialog Box** by any of the following ways with the CX-Designer.

- Select **PT** Menu - **Transfer** - **Transfer Setting**
- Select **PT** Menu - **Transfer - Quick Transfer [To PT]**. Click the **Setting** Button in the displayed dialog box.
- Select **PT** Menu - **Transfer [To PT]**. Click the **Setting** Button in the displayed dialog box.
- Select **PT** Menu - **Transfer - Transfer Program**. Click the **Comms.Method** Button in the displayed Screen Data Transfer Dialog Box.



3. Select the **NS-Runtime** from the Comms.Method
4. Click the **OK** Button to close the Comms.Method Dialog Box.
5. Transfer the project data by any of the following methods.
   -**PT** Menu – **Transfer** – **Quick Transfer [To PT]** Menu
   (Use this method to send only changed data to NS-Runtime.)

   -**PT** Menu – **Transfer** – **Transfer [To PT]** Menu
   (Use this method to send all project data to NS-Runtime.)

   -**PT** Menu – **Transfer** – **Transfer [From PT] Menu**
   (Use this method to receive project data from NS-Runtime.)

   - **PT** Menu – **Transfer** – **Transfer Program** – **Screen data transfer program**
6. After the transfer, restart the NS-Runtime.

**Note**

◆ Project data cannot be transferred while NS-Runtime is running.

◆ The downloaded project data will be stored in the following project storage folder.
\ NS-Runtime Installation folder \ Runtime
Project data that is stored in this folder can be directly opened from the CX-Designer.
In this case, it is not necessary to transfer the modified project data again.

◆ Downloaded project data (Project data stored in \NS-Runtime Installation folder\ Runtime) cannot be transferred by the CX-Designer if the project data is being edited with another CX-Designer.

◆ Operation methods for using CX-Designer's Menus and screen data transfer program are the same as those for NS Series. For details, refer to the Transferring Data to the PT in the CX-Designer Online Help.

# Section 7

# Troubleshooting

This section describes the countermeasures for errors that may occur when creating projects with the CX-Designer or operating them with the NS-Runtime.

This section explains errors specific to the NS-Runtime. For information on other errors, refer to 5 Troubleshooting and Maintenance in the NS Series Programming Manual.

# 7-1 Troubleshooting Errors When Creating Screens

This section describes possible errors occurred when creating screens with the CX-Designer and their countermeasures.

This section explains errors specific to the NS-Runtime. Refer to 5 Troubleshooting and Maintenance in the NS Series Programming Manual for information on other errors.

| Symptoms | Cause | Possible Countermeasure |
|---|---|---|
| Cannot resize a screen in the screen properties. | Values out of range are set for the screen size. | Set as follows.<br>-NSA Series<br>Height: 1 to 768, Width: 1 to 1024<br><br>-Other than NSA Series<br>The size must be the same or smaller than the maximum screen size that is set in the System Setting Menu under the PT Menu. |
| Cannot convert a Project. | Attempted to convert projects, for which the serial port A/B is set to the following settings, to NSA12/15-TX01[] or NS-Runtime.<br><br>-Host Type is other than SYSMAC-PLC<br>-Temperature Controller Unit<br>-Memory Link<br>-Bar code<br>-Modem Connection | Convert a project for which serial port is set to the PLC and the host type is set to the SYSMAC-PLC.<br>Or, convert a project for which the serial port is set to the Not used. |
| | Attempted to convert projects from NS-Runtime to NS Series. | Projects cannot be converted from NS-Runtime to NS Series. |
| Cannot set the Save Cycle for $HB/$HW and Data Log. | Value out of range has been set for the Save Cycle in the system setting dialog box. | Set a value to between 1 second and 24 hours for the save cycle. |
| Cannot save data log setting. | The logging points total that have been set in Data Log Setting Dialog Box exceed 160,000 points. | Set it to 160,000 points or less. |
| Cannot save a document table setting. | Attempted to set an invalid path for the document folder. | Specify a correct path. |
| | The file extension is not '.pdf'. | Specify a file which extension is '.pdf'. |
| Cannot arrange a document display object. | Attempted to create a document display object on a frame, sheet or pop-up screen. | Create a document display object on a base screen. |
| | Attempted to create two or more document display objects on one screen. | Only one document display object can be created on each screen. |

# 7-2 Troubleshooting Errors during NS-Runtime Operation

This section describes possible errors occurred during NS-Runtime operation and their countermeasures.

This section explains errors specific to NS-Runtime. For information on other errors, refer to 5 Troubleshooting and Maintenance in the NS Series Programming Manual.

| Symptom | Cause | Possible countermeasure |
|---|---|---|
| Cannot start a project with the NS-Runtime. | The project model is not NSA12/15-TX01[] or NS-Runtime. | Change the project to NSA12/15-TX01[] or NS-Runtime.<br>Or, transfer a project which model is NSA12/15-TX01[] or NS-Runtime. |
| | The project is not downloaded. | Download a project using the screen transfer function. |
| | USB dongle is not connected. | Connect the USB dongle provided with the NS-Runtime. |
| Cannot display a document. | Acrobat(R) Reader is not installed. | Install Acrobat(R) Reader. |
| | An invalid file is specified. | Specify a correct PDF file. |
| | A document number, for which a document file is not set, or a document number out of range has been specified. | Specify a correct document number. |
| | The document display direction address is turned OFF. | Turn ON the document display direction address. When selecting the document display direction address, the document will be refreshed only when the specified address is ON. |
| Cannot check a screen using the data check of the system menu. | Screen data that you are trying to check does not exist. | Specify an existing screen data number. |
| Cannot start up CX-Programmer from the system menu. | CX-Programmer is not installed. | Install the CX-Programmer. |
| Cannot start up SwitchBox Utility from the system menu. | SwitchBox Utility is not installed. | Install the SwitchBox Utility. |
| Slow display refresh | Frequent opening/closing of screens and pop-up screens or frequent switching of frames. | If screens or frames are switched or pop-up screens are opened and closed too frequently, the display may update slowly and communications may be delayed. Adjust the interval between screen switches to prevent system overload. |
| | Frequent executing of macros including READCMEM and WRITECMEM that communicate with the PLC. | Too many communication points or inconsecutive addresses may slow communications. Try to read and write consecutive addresses all at once. |
| | Short save cycle for the Internal Holding Memory. | Adjust the save cycle to prevent system overload. |

# 7-3 Error Messages and Countermeasures

This section describes the countermeasures for errors that are peculiar to the NS-Runtime. For information on other error messages, refer to 5-2 Error Messages in the NS Series Programming Manual and the Error messages and Countermeasures in the CX-Designer Online Help.

Messages displayed on the CX-Designer.

<table>
<tr><th>Message</th><th>Cause</th><th>Possible Countermeasure</th></tr>
<tr><td>The project for conversion does not support Barcode. Cancel the setting of Barcode before converting.</td><td rowspan="6">Attempted to convert a project, for which the serial port A/B was set to the following settings, to NS-Runtime or NSA12/15-TX01[].<br><br>- Host type is other than SYSMAC-PLC<br>- Temperature Controller<br>- Memory Link<br>- Barcode<br>- Modem connection</td><td rowspan="6">Convert a project for which the Serial Port is set to the SYSMAC-PLC.<br>Or, convert a project for which the serial port is set to the Not used.</td></tr>
<tr><td>The project for conversion does not support Temperature Controller. Cancel the setting of Temperature Controller before converting.</td></tr>
<tr><td>The project for conversion does not support Memory Link. Cancel the setting of Memory Link before converting.</td></tr>
<tr><td>The project for conversion does not support Modem connection. Cancel the setting of Modem connection before converting.</td></tr>
<tr><td>The project for conversion does not support MELSEC-PLC. Cancel the setting of MELSEC-PLC before converting.</td></tr>
<tr><td>The project for conversion does not support SIMATIC. Cancel the setting of SIMATIC before converting.</td></tr>
<tr><td>Only one document display can be placed in a screen.</td><td>Attempted to place two or more document display objects on one screen.</td><td>Only one document display can be created on each screen.</td></tr>
<tr><td>A document display cannot be created on a sheet.</td><td>Attempted to place a document display object on a sheet.</td><td>Create a document display object on a base screen.</td></tr>
<tr><td>The object that cannot be arranged on the pop-up screen is contained.</td><td>Attempted to place a document display objects on a pop-up screen.</td><td>Create a document display object on a base screen.</td></tr>
<tr><td>Some objects cannot be pasted on the frame.</td><td>Attempted to place a document display object on a frame object.</td><td>Create a document display object on a base screen.</td></tr>
<tr><td>The Document Folder Path is not set.</td><td>Document folder path has not specified in a Document Table Setting Dialog Box.</td><td>Specify a path.</td></tr>
<tr><td>Specify the Save Cycle to between 1 second and 24 hours.</td><td>Value out of range has been set for the save cycle of the Internal Holding Memory in the System Setting Dialog Box.</td><td>Set a value to between one second and 24 hours for the save cycle.</td></tr>
<tr><td>Destination folder is not set.</td><td>On the system setting dialog box, the save destination of history data has not been selected yet.</td><td>Specify a path.</td></tr>
</table>

Messages displayed on the NS-Runtime

| Message | Cause | Possible Countermeasure |
|---|---|---|
| Failed to initialize CX-Server. Check if CX-Server is Installed and then re-start the system. | CX-Server is not installed. | Install the CX-Server. |
| Failed to acquire host information. Check the communication setting with the support tool and transfer the project data again. | Cannot read project data. (Not downloaded or corrupted.) | Download project data. |
| Failed to initialize communication processing. Exit the application except Run and re-start the system. | Cannot read project data. (Not downloaded or corrupted.) | Download project data. |
| | Attempted to open a project that is not supported by the NS-Runtime/ NSA Series. | Download project data supported by the NS-Runtime/NSA Series. Or, convert the project data to a model that is supported by the NS-Runtime/NSA Series. Then download it. |
| No project data is registered. Press OK button and download project data. | Project data is not downloaded. | Download project data. |
| | Two or more projects have been stored in a project storage folder (\NS-Runtime's Installation folder \Runtime). | Delete unnecessary project data from a project storage folder. |
| Cannot start the project because the model is not supported. Change the project model or transfer a project which model is supported. Supported Model: NS-Runtime/NSA Series | Attempted to open a project that is not supported by the NS-Runtime/ NSA Series. | Download project data supported by the NS-Runtime/NSA Series. Or, convert the project data to a model that is supported by the NS-Runtime/NSA Series. Then download it. |
| Error 7:HASP HL Key not found | A USB dongle provided with the NS-Runtime is not connected. | Connect the USB dongle. |
| Cannot open the project data because it is being edited in CX-Designer. | A project stored in a project storage folder is being opened with the CX-Designer. | Close a project that is opened with the CX-Designer. Then re-start the NS-Runtime. |
| Please install the Acrobat(R) Reader. | Displayed a screen with a document display object on a computer in which the Adobe(R) Reader is not installed. | Install the Adobe(R) Reader. |
| Could not startup CX-Programmer. Please install CX-Programmer. | Failed to start up when selecting the CX-Programmer from the system menu. | Install the CX-Programmer. |
| Could not startup the SwitchBox utility. Please install the SwitchBox utility. | Failed to start up when selecting the SwitchBox Utility from the system menu. | Install the SwitchBox Utility. |

# Revision History

A manual revision code appears as a suffix to the catalog number on the cover of the manual.

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